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12 October 1978

USSR AND EASTERN EUROPE SCIENTIFIC ABSTRACTS  
BIOMEDICAL AND BEHAVIORAL SCIENCES  
No. 95

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| USSR   | Medicine              |  |                        |                              |      |          |                    |              |                |            |         |                       |        |               |                         |              |                   |            |                |                     |
| Aerospace Medicine   | Microbiology          |  |                        |                              |      |          |                    |              |                |            |         |                       |        |               |                         |              |                   |            |                |                     |
| Agrotechnology   | Physiology            |  |                        |                              |      |          |                    |              |                |            |         |                       |        |               |                         |              |                   |            |                |                     |
| Biology  | Psychology/Psychiatry |  |                        |                              |      |          |                    |              |                |            |         |                       |        |               |                         |              |                   |            |                |                     |
| Botany   | Public Health         |  |                        |                              |      |          |                    |              |                |            |         |                       |        |               |                         |              |                   |            |                |                     |
| Epidemiology/Immunology  | Radiobiology          |  |                        |                              |      |          |                    |              |                |            |         |                       |        |               |                         |              |                   |            |                |                     |
| Human Engineering  | Toxicology            |  |                        |                              |      |          |                    |              |                |            |         |                       |        |               |                         |              |                   |            |                |                     |
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12 October 1978

USSR AND EASTERN EUROPE SCIENTIFIC ABSTRACTS  
BIOMEDICAL AND BEHAVIORAL SCIENCES

No. 95

This serial publication contains abstracts of articles and news items from USSR and Eastern Europe scientific and technical journals on the specific subjects reflected in the table of contents.

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Aerospace Medicine

CZECHOSLOVAKIA

UDC 613.644:613.693:629.138.5

EXPOSURE OF CREWS OF COMMERCIAL PLANES TO NOISE

Prague PRACOVNI LEKARSTVI in Czech Vol 30 No 1-2, Feb 78 pp 28-33 manuscript received 1 Jul 76

[Abstract] An investigation was made of noise levels in various aircraft used in civil aviation in Czechoslovakia. The ISO Standard 199 in  $L_{Aeq}$  was used in the evaluation. The maximum allowable noise level  $L_{Aeq} = 85$  dB(A). On the basis of the international standards, the noise levels  $L_A$  in the crew cabin should be limited to 85 dB(A) for long flights, 87 dB(A) for medium and short flights, 90 dB(A) for planes used in agricultural sprayings, and 100 dB(A) for sport aircraft. Profiles of the noise levels from take-off to landings are shown for various lengths of overall flying times. Among the propeller aircraft used in Czechoslovakia, the USSR IL 14 and IL 18 planes exceed the allowable limits only slightly. The Czechoslovak planes L 200 and L 410 exceed the limits substantially. There are no jet planes of Czechoslovak production used in civilian flying. Only the USSR IL 62, TU 104, TU 134 and JAK 40 are used; these conform to the 85 dB(A) levels. This level should be maintained to avoid damage to the hearing systems of the crews. The reason for late detection of health impairment of the crews is the fact that their health is excellent and they are young. The agricultural aircraft Z 37 is the worst offender. Changes in the design of Czechoslovak aircraft appear to be mandatory. Figures 4, references 11: 5 Czech, 1 USSR, 5 Western.

Agrotechnology

USSR

UDC 62+636/639+338.45:63

EFFECTIVENESS OF NEW EQUIPMENT AND TECHNOLOGY IN ANIMAL HUSBANDRY

Moscow VESTNIK SEL'SKOKHOZYAYSTVENNOY NAUKI in Russian No 3 Mar 78 pp 131-137

MOROZOV, N. M., doctor of economic sciences and RAYKHLIN, P. M., candidate of economic sciences, All-Union Institute of Electrification of Agriculture (VIESKh)

[Abstract] This is an extensive article on existing and projected mechanization of animal husbandry to demonstrate that the greatest increases in labor productivity will come in those areas which have mastered mechanization of the production processes. Data cited include percentages of cattle, pig, sheep and poultry farm production supported by mechanization, investment of man hours for production of various products (e.g., milk, wool, eggs), percentage figures for extent of mechanization of animal farms, investment of capital and labor and effectiveness of mechanization--projected for 1980. Equipment available (e.g., for dairies), and farms of importance (e.g., Komunarka, Moscow Oblast, and Erishkyay, LithSSR) are cited. Data are in tabular form. No references.

USSR

UDC 577.158.52.02

CHEMICAL MODIFICATION OF EPSILON-NH<sub>2</sub>-GROUPS OF LYSINE IN HORSERADISH PEROXIDASE. ITS INFLUENCE ON THE CATALYTIC PROPERTIES AND SPATIAL STRUCTURE OF THE ENZYME

Moscow BIOKHIKIYA in Russian Vol 43 No 7 Jul 78 pp 1242-1250 manuscript received 11 Oct 77

UGAROVA, N. N., ROZHKOVA, G. D. and BEREZIN, I. V., Department of Chemical Enzymology of the Moscow State University imeni M. V. Lomonosov

[Abstract] The horseradish enzyme studied was KF 1.11.1.7. In previous studies (1978), the authors had shown the accessibility of the epsilonamino groups of the peroxidase of lysine residues to modification with acetic, propionic, butyric, valeric and succinic acids and with trinitrobenzenesulfonic acid; this article examines the catalytic properties of these various modified peroxidases, their spectra of absorption and circular dichroism. All of the prepared peroxidase modifications resemble the native enzyme in that they retain 100% peroxidase-activity, at pH 7, for o-dianisidine; this is cited as evidence of the absence of epsilon-NH<sub>2</sub>-groups in the enzyme's active center. Monobasic-acid modifying agents do not alter the dependence of the peroxidase on pH; modification by the dibasic, succinic, acid broadens the pH-dependence of the relative enzyme activity. Spectra of absorption and circular dichroism (illustrated) of native and modified enzyme in the region 260-450 nm and 450-700 nm indicate changes in the tertiary configuration due to modification of the epsilon-NH<sub>2</sub> groups of lysine. Modification of 4 epsilon-NH<sub>2</sub> groups (by butyric and succinic acid), and of 3 groups (by trinitrobenzenesulfonic acid, TNBS) promotes increase in rigidity of the protein-encased heme; modification of the 6 epsilon-NH<sub>2</sub> groups by TNBS leads to a more exposed enzyme structure as compared with the native unmodified enzyme. Figures 4; references 19: 9 Russian, 10 Western.

USSR

UDC 577.156.3

IMMOBILIZATION OF TRYPSIN ON A MINERAL MATRIX

Moscow PRIKLADNAYA BIOKHIMIYA I MIKROBIOLOGIYA in Russian Vol 14, No 4, Jul/Aug 78 pp 543-547 manuscript received 26 Jul 77

IVANOVA, G. P., ZAYTSEVA, L. A., MIRGORODSKAYA, O. A., and MOSKVICH, B. V., All-Union Scientific Research Technological Institute of Antibiotics and Enzymes for Medical Use, Leningrad

[Abstract] Immobilization of enzymes on insoluble polymer or mineral matrices is widely used for producing various technological biocatalysts and biosorbents. In this experiment the immobilization of the proteolytic trypsin enzyme on silochrome with various surface treatments was studied. Three grades of silochrome were used, each with a different porosity and each differently activated. The trypsin was a product of the SPOFA firm (in the Czechoslovak Socialist Republic). The highest specific activity of insoluble trypsin was attained on silochrome activated with glutaric aldehyde or with aliphatic aldehyde residues. The effect of three kinds of additives on the trypsin-silochrome bond was also determined, namely of an inhibitor (benzamidine), a stabilizer ( $Ca^{2+}$  ion), and substrates (casein, benzoyl argininamide). They were all found to contribute to the trypsin immobilization. Electrochemical measurements have, furthermore, established the optimum pH in each case and the higher alkalinity in the presence of casein. The authors thank V. K. Rayt, V. P. Kumarev and V. V. Dinitserova at the Siberian Division of the Academy of Sciences USSR for supplying the silochrome specimens activated with aliphatic aldehydes. Figures 3; references 14: 4 Russian, 2 German, 8 Western.

USSR/CUBA

UDC 575.591

DEVELOPMENT OF MASS SCREENING FOR HEMOGLOBIN S IN CUBA FOR GENETIC COUNSELING. ANALYTIC RESULTS OF 24000 BLOOD SAMPLES

Moscow GENETIKA in Russian No 6, 1978 pp 1079-1084 manuscript received 21 Apr 77

HEREDERO, L., GRANDA, H. and ALTLAND, K., Advanced Medical Institute, Havana, Cuba

[Abstract] Electrophoretic and solubility tests were conducted on a mass screening basis in the province of Havana to detect the incidence of HbS. Analysis of 24458 blood samples showed that the frequency of HbS carriers was 3.03%, and of HbC 0.7%. In addition, 15 rare Hb variants were detected, including 9 cases involving the alpha chain, 3 cases involving the beta

chain, and one which represented interaction of Hb with a variant alpha chain. The frequencies of the C, S, and A alleles were 0.0038, 0.016, and 0.98, respectively. The techniques described in this report have been patented and the reagents are produced by Desaga in Heidelberg, West Germany. Tables 5; figures 4; references: 9 Western (incl. 3 Cuban).

USSR

UDC 615.31:547.854.1].012.1

SYNTHESIS OF 2-METHYL-4-AMINO-5-ETHOXYMETHYL PYRIMIDINE  
REPORT II: PROCESSES OF CONDENSATION AND EXTRACTION

Moscow KHIMIKO-FARMATSEVTICHESKIY ZHURNAL in Russian Vol 12, No 7, Jul 78  
pp 106-109 manuscript received 10 Nov 77

KAZ'MINA, A. K. and RYMOREVA, I. N., Bolokhov Chemical Combine for Synthetic Intermediate Products and Vitamins

[Abstract] The product of methylation during synthesis of 2-methyl-4-amino-5-ethoxymethyl pyrimidine had been shown to include cis and trans isomers of  $\alpha$ -methoxymethylene- $\beta$ -ethoxypropionic nitrile in equal amounts, as well as acrylic and acetalic impurities. A study of this synthesis was continued, focusing on the condensation of the said isomers with acetamide and on the extraction of 2-methyl-4-amino-5-ethoxymethyl pyrimidine, the latter process involving several operations in accordance with conventional technology. The reacting mass after condensation as well as the technical end product were analyzed by gas-liquid chromatography with an LKhM-8 MD instrument including a thermal-conductivity detector and by spectrophotometry with an IKS-14 A instrument using LiF and NaCl prisms. A special procedure was used for extracting this pyrimidine salt from the reacting mass with the vat product. Figures 4; references 1, Russian.

USSR

UDC 616.211-[232-056.3-02:54]-07

CLINICO-MORPHOLOGICAL DIAGNOSIS OF ALLERGIC DISEASES OF THE UPPER RESPIRATORY TRACT IN CHEMICAL ETIOLOGY

Moscow VESTNIK OTORINOLARINGOLOGII in Russian, No 4, Jul-Aug 78 pp 11-16  
manuscript received 29 Nov 77

OSTAPKOVICH, V. YE., professor, director: Department of Occupational Ear-Nose-Throat Pathology, PANKOVA, V. B., KUDINOVA, O. V., ARUTYUNOV, V. D., professor, director: Pathomorphological Laboratory, KRUGLIKOV, G. G., Institute of Occupational Hygiene and Occupational Diseases at the USSR Academy of Medicine

[Abstract] Fast progress in the chemical and pharmaceutical industries, especially the use of new materials, contributes to allergic diseases of the upper respiratory tract. In order to develop objective differential criteria for diagnosing these diseases and establishing their spread, 784 workers handling synthetic vitamins, formaldehyde, calaphonium, and chromium, nickel, or cobalt salts were tested for the response dynamics to endonasal provocation with specimens of respective allergenic substances. Their responses were compared with those of 87 rhinopathic persons. The symptoms were tracked by temperature variations in the mucous membrane as well as by electrothermal measurements and rhinocytological examination. A statistical evaluation of these data has provided a basis for a more precise diagnosis and a better prophylaxis. References 11: 7 Russian, 4 Western.

USSR

UDC 678.5:539.23:539.219.3

INSTRUMENT FOR THE STUDY OF THE SORPTION OF LIQUID LOW-MOLECULAR SUBSTANCES BY POLYMER FILMS

Moscow ZAVODSKAYA LABORATORIYA in Russian No 7, 1978, pp 834-835 manuscript received 21 Apr 77

GORDEYEV, YU. M., ZAYTSEV, V. N. and KITAYEV, K. N.

[Abstract] An instrument has been developed for determination of the sorption-diffusion characteristic from the kinetic curves of elongation of polymer films in the process of sorption. A diagram of the instrument is presented in Figure 1. Film specimens 5-8 mm in width and 60 or 110 mm in length are used. The film is attached to a weight and a glass bar and is stretched by the action of a spring, designed to apply a force of 3-5 gf/mm<sup>2</sup> of film cross section. The method is suitable for polymer films in which the sorption of the low-molecular substance does not cause irreversible deformations, so that upon desorption the specimen returns to its original length. The method is not suitable for those cases in which

sorption causes a great change in the relaxation phenomena in the polymer, such as in highly oriented polymer films and low-molecular substances causing significant swelling of the polymer. Figures 2; references 4: 2 Russian, 2 Western.

Biophysics

USSR

UDC 578.087.9:615.849.19

STUDIES ON THE MECHANISM OF ACTION OF THE BIOLOGIC EFFECT OF HELIUM-NEON LASER

Moscow BIOLOGICHESKIYE NAUKI in Russian No 7, 1978 pp 30-37 manuscript received 2 Jan 78

ZUBKOVA, S. M., Central Scientific Research Institute of Health Resort Science and Physical Therapy, Ministry of Health USSR

[Abstract] The involvement of catalase (E.C. 1.11.1.6) in the mechanism of biologic action of helium-neon laser emission ( $1-2.5 \text{ mW/cm}^2$ ) was investigated with *in vitro* and *in vivo* systems using rat hepatic and brain preparations, based on the overlap between the laser emission peak at 632.8 nm and catalase absorption peak at 628 nm. Evaluation of the experimental findings indicated that laser-enhanced phosphorylative and peroxidase activities of mitochondrial preparations depend on catalase and involve peroxide compounds in the conversion of laser energy into the formation of high energy ATP phosphate bonds. Figures 4; references 31: 6 Western, 25 Russian.

USSR

UDC 576.314:538.22

CERTAIN MAGNETIC PROPERTIES OF BIOLOGIC MEMBRANES

Kiev DOPOVIDI AKADEMIYI NAUK UKRAYINS'KOYI RSR in Ukrainian No 6, 1978 pp 550-554 manuscript received 19 Jan 78

KADNYKOV, O. H., ZALUBOVSKYI, I. I., and YAKOVLYEV, O. V., Kharkov State University

[Abstract] Theoretical considerations are provided for the use of bilayer lipid membranes as a test object in evaluating the mechanism of action of constant magnetic fields on biological systems. Particular attention is accorded to the fact that processes involving spin-spin interactions show a high degree of susceptibility to magnetic fields and their alterations result in functional and structural changes. Investigations conducted with lipids derived from the white matter of bovine brains demonstrated that free-radical peroxidation of bilayer lipid membranes results in an increased production of highly reactive singlet oxygen on exposure to magnetic fields, as well as changes in the IR spectra of such membranes and alterations in permeability to cations. Figures 1; references 13: 6 Western, 7 Russian.

USSR

UDC 575.24:582.998.4

CONSTANT MAGNETIC FIELDS AND CHROMOSOMAL ABERRATIONS IN PLANTS

Moscow GENETIKA in Russian No 6, 1978 pp 1101-1103 manuscript received 20 Jun 77

SHEVCHENKO, V. V., GRINIKH, L. I. and STREKOVA, V. YU., Institute of Developmental Biology imeni N. K. Kol'tsov, Academy of Sciences (AS) USSR, and the Institute of Plant Physiology imeni K. A. Timiryazev, AS USSR, Moscow

[Abstract] Seeds of *Crepis capillaris* were exposed to constant magnetic field (9-12 kOe) during storage and germination under various conditions to determine whether the background incidence of chromosomal aberrations would be altered. The results showed that exposure to constant magnetic fields did not alter the background incidence of chromosomal aberrations under the conditions of this study. References 3: 1 Russian, 2 Western.

USSR

UDC 615.849.19.015.4:[612.6.03:612.74

INFLUENCE OF THE RADIATION OF A HELIUM-NEON LASER ON THE PROCESS OF REGENERATION OF IRRADIATED TRANSPLANTED SKELETAL MUSCLE

Moscow BYULLENTEN' EKSPERIMENTAL'NOY BIOLOGII I MEDITSINY in Russian No 7, Jul 78, pp 64-67 manuscript received 5 Dec 77

POPOVA, M. F. and IL'YASOVA, SH. G., Laboratory of Evolutionary Histology, Institute of Evolutionary Morphology and Ecology of Animals imeni A. N. Severtsov, Academy of Sciences, USSR, Moscow

[Abstract] This work presents a study of the influence of the light generated by a helium-neon laser on the regeneration of irradiated transplanted muscle tissue. The experiments were performed on 2 to 3 month old white rats, and involved autotransplantation of the gastrocnemius muscles, in some cases following ionizing irradiation with a dose of 1,000 R. This radiation of the extremity almost completely suppresses the capability of the skeletal muscle for transplantation regeneration. The inflammatory process is also somewhat delayed. After 2 to 3 months, the transplantate is a connective-tissue formation consisting of compact connective tissue with sensory innervation. Transplanted muscles subjected to laser radiation, however, do undergo the process of regeneration, even if they have been previously irradiated with ionizing radiation. Laser therapy results in the formation of a somewhat smaller than normal muscle, consisting primarily of functionally active muscle tissue. Laser radiation thus decreases the aftereffect of ionizing radiation trauma and normalizes the process of transplantation regeneration of muscle tissue. Figures 3; references 13: 11 Russian, 2 Western.

Environmental and Ecological Problems

USSR

UDC 626.862+(474.5)

CLOSED DRAINAGE UNDER CONDITIONS OF INTENSIVE AGRICULTURAL PRODUCTION

Moscow VESTNIK SEL'SKOKHOZYAYSTVENNOY NAUKI in Russian No 3 Mar 78 pp 103-111

BALZARYAVICHYUS, P., candidate of agricultural sciences, LUKYANAS, A., candidate of technical sciences and YUSHKAUSKAS, YU., candidate of agricultural sciences, Lithuanian Scientific Research Institute of Hydraulic Engineering and Reclamation (LitNIIGiM)

[Abstract] About 56% of the territory of the LithSSR in an otherwise productive soil requires reclamation for use in agriculture. Reclamation in the republic is quite complex and has involved management of reservoirs, canal construction, management of the hydraulic engineering enterprises, removal of rocks and leveling of pastures. Drainage for water-logged areas has been of special concern and considerable discussion is devoted to provision of an underground pipe system (e.g., at the "Erishkyay" farm in Panevzhkiy Rayon). Pictorial description of reclamation in action is presented. Figures 4; references 7, Russian.

USSR

UDC 639.3.06(088.8)

UNIVERSAL CLIMATE CHAMBER FOR LABORATORY MAINTENANCE OF ANIMALS

Kiev VESTNIK ZOOLOGII in Russian No 3 May/Jun 78 pp 67-72 manuscript received 30 Jul 76

LUTSENKO, N. A., BERDYSHEV, G. D., VOINSTVENSKIY, V. A., GOVORUN, D. N., GORCHEV, V. F. and KREKOTEN', YU. V., Kiev University; Institute of Zoology, Academy of Sciences UkrSSR

[Abstract] An elaborate unit set up has been devised which provides a climate-controlled chamber for maintaining animals used in comparative ecological and physiological studies under conditions of an aqueous environment, a terrestrial environment or a combination of water-and-land environments (e.g., a shore). A schematic drawing of the setup is presented which reveals that its focal part is a cylindrical hermetic reservoir; this has a bottom which can be raised or lowered (out of or into water) to create any of the three environments, as desired. Temperature, gas composition, climatic conditions (including humidity), pressure, light, etc., can be controlled so as to duplicate conditions in various geographic zones of the world. Figures 3; references 4: 3 Russian, 1 Western.

USSR

UDC 616.33-002.44-06:546.212

PREVALENCE OF ULCERS IN INDIVIDUALS WHO ARE LONGTERM USERS OF DRINKING WATER  
CONTAINING HIGH CONTENT OF SODIUM CHLORIDE

Kiev VRACHEBNOYE DELO in Russian No 6 Jun 78 pp 72-74

FATULA, M. I. and IVANCHO, E. S., Department of Hospital Therapy of Uzhgorod  
University

[Abstract] Incidence of ulcers varies throughout the world and even in the same country or district. Ulcerative disease is said to affect 4.8 per 1000, on the average, in the USSR, incidence widely varying from 0.9-2.1 in Central Asia to 5.0-9.1 in the Baltic republics. Dietary intake is thought to be responsible for the variance, and this article examines the possible role of high sodium chloride in the drinking water in the Dânîlovskiy orchard sovkhoz of the Khutskiy Rayon of Transcarpathia. This area has large deposits of rock salt. Period of interest is 1968 to 1972. Two villages were studied: Alexandrovka (high salt) and Zolotareva (normal salt). No substantial difference was found in the incidence of ulcers in the two villages, but the rate of temporary loss of working ability was higher in Alexandrovka. References 3, Russian.

USSR

UDC 371.71(470.23-25)

NATURAL RESISTANCE OF WORKERS IN A LARGE PIG-BREEDING COMBINE

Moscow GIGIYENA I SANITARIYA in Russian, No 7, Jul 78 pp 113-115 manuscript  
received 3 Mar 77

OLEFIR, A. I., Kiev Scientific Research Institute of Labor Hygiene and Occupational Diseases and CHERNOBAY, V. A., Laboratory of the Kalityansk Sovkhoz-Combine imeni Semicentennial of the USSR

[Abstract] The natural resistance of female workers within the 25-40 age group with 1-3 years experience in one of the largest pig-breeding combines, the Kalityansk Complex with a capacity of 108,000 animals, was examined by several methods. In one test (modification of the method by A. I. Ivanova and B. A. Chukhlovina) the absorptive and digestive capacity of neutrophils was gauged relative to the 209-R strain of staphylococcus. In another test the lysozyme content in blood serum (according to N. N. Klamparskaya and O. G. Alekseyeva) and in saliva (according to Z. V. Yermol'yeva) with control siftings on a solid substrate was measured. Also the bactericidal activity of blood serum (according to Pillimer), the bactericidal capacity of the skin and the state of the dermal autoflora (according to G. A. Shal'nova) as well as those of the mucous membrane (according to N. N.

Klemparskaya) were examined. The results indicate a lowering of the natural resistance. The humoral indicators of a general-purpose immunizer, namely the lysozyme content in saliva and in blood serum as well as the bactericidal activity of blood serum, have been found to be most sensitive to the effects of biological agents. The toxigenicity of bacterial flora and prophylactic means were evaluated at the various stations in the pig breeding process. Systematic ultraviolet irradiation and proper ventilation of all compartments should improve the sanitary conditions. References 7: 5 Russian, 2 Western.

USSR

PHYSIOLOGICAL EVALUATION OF LUNG ADAPTATION TO EXTREME CONDITIONS IN THE FAR NORTH

Moscow FIZIOLOGIYA CHELOVEKA in Russian Vol 3, No 6, Nov/Dec 77 pp 1023-1035 manuscript received 10 May 77

MILOVANOV, A. P., Institute of Human Morphology, Academy of Medical Sciences USSR, Moscow

[Abstract] The climate of the Far North is characterized by extremely cold and raw weather. Its effect on the respiratory system, the most vulnerable and least protected organs in the human body, is discussed here on the basis of research data pertaining to both healthy and ill persons. Additional factors possibly affecting the performance of the pulmonary cycles, atmospheric electricity, and trasts, geomagnetism, solar radiation cycles, atmospheric electricity, and fluctuations in the composition of the polar air. Last but not least of the ecological factors directly or indirectly affecting the respiratory system is air pollution, a by-product of urban and industrial development with its specific features in a polar climate. Studies of this nature conducted in this extreme climatic zone are of not only practical but also scientific interest, inasmuch as they significantly contribute to an understanding of man's adaptation mechanisms and pulmonary pathology, with a view toward developing prophylactic measures. References 47: 39 Russian, 8 Western.

USSR

UDC 582.2:631.433+502.757

ALGOFLORA ON TECHNOGENOUS SANDS IN OIL AND GAS MINING REGIONS OF THE MIDDLE  
OB' BASIN AND THE INFLUENCE OF PETROLEUM POLLUTION ON IT

Sverdlovsk EKOLOGIYA in Russian No 3, May/Jun 78, pp 29-35 manuscript  
received 24 Nov 77

NEGANOV, L. B., SHILOVA, I. I. and SHTINA, E. A., Kirov Agricultural Institute; Institute of Ecology of Plants and Animals; Ukrainian Scientific Center, Academy of Sciences, USSR

[Abstract] The natural flora of technogenous sands in the Central Ob' basin was studied by producing geobotanic descriptions of sectors revealed by technogenous effects on the sands: the area of drilling of oil wells in 8 oil deposits, the paths of electric power transmission lines and oil and gas pipelines, and certain other technogenous sands. The surrounding forest was used as a control. Findings included "pure" sands, sands polluted with oil to varying degrees, and areas consisting of slag formed where oil had burned in the sand, so-called "pyrogenous" sands. The influence of the 2 anthropogenic factors of disruption of the natural plant and soil cover and pollution with oil is analyzed. It is found that algae of various kinds manifest varying sensitivity to petroleum pollution. Some of these algae may be useable as indicators of the degree of petroleum pollution of soils. Out of the 74 taxons of algae found, the blue-green algae were most common, including a significant fraction (30% of all species) of nitrogen-fixers. The yellow-green and diatomaceous algae are most sensitive to oil pollution. References 23: 16 Russian, 7 Western.

## Epidemiology

USSR

UDC 616.988.25-022.395.42-036.88

### FATAL SECOND INCIDENCE OF TICK ENCEPHALITIS

Moscow SOVETSKAYA MEDITSINA in Russian No 6 Jun 78 p 146 manuscript received 31 May 77

SHASAITOV, SH. SH., CHARTORIZHSKIY, N. A. and SMEKALOV, V. P., Chita Medical Institute

[Abstract] A 16-year old male was received at a rayon hospital on 8 Jul 73, after having become acutely ill on 7 Jul; a tick had apparently attached itself to the hairy part of his head in early July. Tick encephalitis was confirmed serologically on 29 Aug [?]. Because of gradual improvement the patient had left for home, on his own, 1 Aug; the parents were warned to keep the patient under ambulatory observation. A year later, he again fell sick suddenly, 19 Aug, and reappeared for treatment, 20 Aug. Complaints were severe headache, repeated vomiting. Apparently, while the subject was on an outing, on 12 Aug, a tick attached itself to him. His condition was serious and included head pain, pronounced meningeal symptoms, epileptiform convulsions, coma, and, despite symptomatic therapy, he died on 24 Aug. Death was ascribed to cerebral insufficiency due to progressive edema, swelling of the brain and subsequent wedging of the trucus cerebri into the large occipital opening. No references.

USSR

UDC 616.981.49

### CLINICAL AND EPIDEMIOLOGICAL CHARACTERISTICS OF DISEASES INDUCED BY ARIZON BACTERIA

Moscow SOVETSKAYA MEDITSINA in Russian No 6 Jun 78 pp 148-149 manuscript received 19 Jul 77

BYGOVSKIY, O. A., docent, Department of Infectious Diseases of the Chelyabinsk Medical Institute

[Abstract] This is a study of disease due to Arizon bacteria, salmonella III subspecies, Kaufman classification, the role of which in human pathology has as yet received little attention. In the cases studied, 33 of 58 patients were classed as sporadic. The product participating in disease transmission could not be identified; 11 patients associated their illness with meat, 4 with dairy products, 2 with bakery goods and 1 with fish products. Epidemically, the cases probably involved group illness; four family outbreaks were seen. Sickness started after ingestion of meat products; Arizon serotypes were identified. A larger outbreak involved an occupational-technical secondary school; incidence of carriers was found to be

insignificant. Prior illness, e.g., of the respiratory area, favored susceptibility to the disease. The disease was generally acute, with a short incubation period, on the average 4 to 6 hrs, and gradually general intoxication. Identification is by laboratory diagnosis and isolation of copro-cultures. No references.

USSR                    UDC 616.988.25-022.395.42-06:616.981.71-06:616.986.7]-  
                          036.21-07

TOPOGRAPHICAL-EPIDEMIOLOGICAL CHARACTERISTICS OF THE COMBINED FOCI OF  
TICK-BORNE ENCEPHALITIS, ENDEMICH RICKETTIOSES AND LEPTOSPIROSES IN WESTERN  
SIBERIA

Moscow ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII in Russian  
No 7 Jul 78 pp 48-51 manuscript received 5 Jul 77

BUSYGIN, F. F., SHAYMAN, M. S. and CHULOVSKIY, I. K., Omsk Scientific  
Research Institute of Infections with Natural Foci, Ministry of Health RSFSR

[Abstract] A number of natural foci of infectious diseases has been identified in Western Siberia: tick-borne encephalitis, Omsk hemorrhagic fever, Asian tick-borne rickettsiosis, Q rickettsiosis, leptospirosis, tularemia, etc. Therefore the studies of such natural foci and their combined effect on human pathology are of considerable importance. This study was concerned with territorial peculiarities of combined infection foci, conditions required for their combined effect and pathological effect on humans. Experimental results showed that population of all geographical zones was affected by all four infections: tick-borne encephalitis, Asian tick-borne rickettsiosis, Q rickettsiosis and leptospirosis. The intensity of infections varied, but a tendency was noted towards increased incidence of Asian tick-borne rickettsiosis progressing from north to south. Leptospirosis was most common in wooded areas, somewhat less common in the steppes and rare in mountainous taiga region. Combined foci of these infections were wide-spread, however. Their effect was related to topographical characteristics and disease carriers. References 6, Russian.

Hydrobiology

USSR

UDC 577.475

EFFECT OF SOME PETROLEUM PRODUCTS AND DISPERSANTS ON THE QUANTITY AND THE PRODUCTIVITY OF BACTERIAL PLANKTON IN THE WHITE SEA

Moscow NAUCHNYYE DOKLADY VYSSHEY SHKOLY, BIOLOGICHESKIYE NAUKI in Russian, No 6 Jun 78 p 140 manuscript deposited in the All-Union Institute of Scientific and Technical Information No 1323-77 Dep

OGARKOVA, O. A. and MAKSIMOV, V. N.

[Abstract] The effect of petroleum products and dispersants, as well as of their mixtures, on the plankton complex along the Karelian shore of the White Sea was studied, for the purpose of determining any structural and functional changes induced in bacterial plankton by these substances. Diesel fuel, motor oil, and diproxamine-157 dispersant were the independent parameters in a 3x2 planned factorial experiment with bottles containing specimens and floating on the sea surface. Diesel fuel and motor oil were found to have a positive effect, diesel fuel somewhat stronger than motor oil, but even 10 mg/liter of the dispersant was found to inhibit the growth of plankton organisms and their production processes during the first two days. This negative effect subsided or vanished entirely after four days, however, indicating an "acclimatization" of plankton to the new organic substance in its environment and, possibly, some participation of the latter in the synthesis of bacterial biomass. A higher concentration of petroleum products in sea water also reduces the negative effect of this dispersant.

USSR

UDC 592.061.3:592

ALL-UNION SCIENTIFIC CONFERENCE ON COMMERCIAL INVERTEBRATES

Moscow ZOOLOGICHESKIY ZHURNAL in Russian Vol 57, No 6, Jun 78 pp 955-957

IVANOV, B. G.

[Abstract] In order to deal with diverse problems in improving the commercial exploitation of invertebrates as a natural resource, the Ichthyological Commission together with the All-Union Scientific Research Institute of Maritime Fishing Economy and Oceanography, the Odessa Division of the Institute of Southern Seas Biology of the Academy of Sciences Ukrainian SSR, and the All-Union Ichthyological Society held an All-Union conference in Odessa on 22-25 November 1977. Other participants included the Pacific Scientific Research Institute of Maritime Fishing Economy and Oceanography, the Far-Eastern Polytechnic Institute (Computer Applications), the Division of Zoology and Parasitology of the Academy of Sciences Belorussian SSR, the Institute of Maritime Biology of the Far-Eastern Science Center of the

Academy of Sciences USSR, and the Institute of Zoology and Parasitology of the Academy of Sciences Lithuanian SSR. The conference split into three sections dealing with 1) crustaceans (45 papers), 2) cephalopods (25 papers), 3) bivalves and echinoderms (18 papers) respectively. A seminar for young scientists, on methods of cephalopod research, was conducted by K. N. Nesis. A wide range of topics was covered at the conference, from biocycles and reproduction mechanisms to parasites and diseases of invertebrates. Problems of aquaculture were not dealt with in depth, in view of a separate conference planned on this subject. By general consensus, an alert was sounded about the increasing danger of man's activities detrimental to the coastal ecological system.

USSR

UDC 574.5

#### ECOLOGIC MODELING OF PROCESSES OCCURRING IN POLLUTED BODIES OF SEA WATER

Sverdlovsk EKOLOGIYA in Russian No 3, May/Jun 78, pp 69-74 manuscript received 25 Feb 77

AKSENOV, YE. I., BRONFMAN, A. M., KURYUSHINA, L. P., KOPYLOV, Z. N. and PROKOPENKO, V. A., Azov Scientific Research Institute for Fisheries

[Abstract] A study is made of the possibility of using a model ecological experiment to study the processes occurring upon pollution of bodies of sea water. The model study of the influence of combined pollution on the ecosystem of the Azov Sea involved a number of identical basins of about  $8 \text{ m}^3$  containing slightly silty sand, sea water with the entire natural system of chemical components and biological micro-components, plus benthic organisms in the relationship characteristic for the littoral biocenosis. The experiment lasted for one month, during which time basins 2 and 4 were exposed to a constant concentration of 4 pollutants: diesel fuel at 0.5 mg/l, an alkylsulfate detergent at 0.25 mg/l, phenol at 0.10 mg/l and hexachloro-rane at 0.02 mg/l, applied by underwater spraying. The combination of pollutants used was found to have a negative effect on the oxygen and biogenic modes and the primary productivity of the water. The beta-mesosaprobe species of phyto- and zooplankton were replaced by alpha-mesosaprobe species, and some representatives of the planktobenthos disappeared. The denitrifying and ammonia-producing bacteria were found to be capable of a high level of adaptation to the pollutants used; the nitrifying bacteria experienced a permanent reduction in activity. The toxic mixture reduced primary productivity by a factor of 2-2.5, and shifted the water from eutrophic to mesotrophic. The energy potential of the experimental basins was 1.5 times less than that of the control basins during the period of the experiment. References 6, Russian.

Immunology

USSR UDC 617.001.17-092.9-07:616-008.9-097.5-092:616.155.32-008.1

PARTICIPATION OF T- AND B-LYMPHOCYTES IN AUTOSENSITIZATION ASSOCIATED WITH THERMAL BURNS

Moscow PATOLOGICHESKAYA FIZIOLOGIYA I EKSPERIMENTAL'NAYA TERAPIYA in Russian No 3 May/Jun 78 pp 40-43 manuscript received 30 Dec 76

EBERT, L. YA. and DOLGUSHIN, I. I., Department of Microbiology of the Chelyabinsk Medical Institute

[Abstract] Test animals used in this work were 280 mice of the SVA strain, 16-20 g, obtained from the "Stolbovaya" colony. Thermal burns were applied on 10 and 30% of the body surface, under ether narcosis, with a cotton-alcohol torch, for 8 sec. The spleens of these mice were found to contain lymphocytes which formed rosettes with sheep erythrocytes loaded with aqueous-salt extracts of burned skin and normal tissues--these erythrocytes thus contained antibodies from burned skin ( $E_{BS}$ ), or normal skin ( $E_{NS}$ ) and normal liver ( $E_{NL}$ ). (It had been shown, in preliminary tests with antithymus globulin obtained from the Immunological Laboratory of the Moscow Scientific Research Institute of Epidemiology and Microbiology, that both T- and B-lymphocytes form these rosettes). The burned mouse spleens were also found to contain antibody-forming cells, demonstrated by use of passive local hemolysis of the erythrocytes. With body surface burns of 10 and 30%, the number of cells (in the spleen of the mice) which form rosettes with erythrocytes loaded with antigens exceeds the number when unprocessed erythrocytes are used; the spleen of the burned animals contain lymphocytes which apparently react with their own antigens. Data also indicate the existence of lymphocytes specifically sensitized to antigens of both burned and normal skin. The B-lymphocytes are believed to participate in the autosensitization process. Migration of leukocytes of peripheral blood of the burned animals is depressed under the influence of extracts from burned skin; under the influence of liver extracts, the migration of leukocytes is stimulated. Processing of the blood with antithymus globulin decreases, by 50-60%, the formation of the factor which inhibits leukocyte migration, hence thymus lymphocytes apparently participate in the autosensitization. References 8: 6 Russian, 2 Western.

USSR

UDC 615.355:577.152.34]315.2:615.384

ANTIGENIC PROPERTIES OF THE PROTEOLYTIC ENZYME TERRILYTINE MODIFIED BY A DEXTRAN

Moscow KHMICO-FARMATSEVTICHESKIY ZHURNAL in Russian Vol 12, No 7, Jul 78  
pp 27-31 manuscript received 19 Jul 77

KASHKIN, A. P., LINDENBAUM, G. M., MAKHOVENKO, L. V., KONSHINA, I. Z., MOSKVICHEV, B. V. and TERESHIN, I. M., All-Union Scientific Research Technical Institute of Antibiotics and Enzymes for Medical Purposes, Leningrad

[Abstract] A study was made of antigenic and immunogenic properties of the enzyme terrilytine covalently bonded to a dextran. For the experiment were used terrilytine specimens from the "Mosmedpreparaty" Plant, after they had been modified to boron-hydride and bisulfide forms by rheopolyglucin ( $M_w = 35,000$ ) and polyglucin ( $M_w = 55,000$ ) plasma substitutes serving as dextran matrices. The effectiveness of individual antiterrilytine sera was determined from immunoelectrophoretic measurements and immunochemical analysis, also during immunization of mice. According to the results, terrilytine and its modifications do have immunogenic properties so that a cure of persons allergic to natural terrilytine appears possible. Figures 3; references 16: 3 Russian, 13 Western.

USSR

UDC 575.91

POLYMORPHISM OF Gm AND Km IMMUNOGLOBULIN ALLOTYPES IN NORTH ALTAIANS OF WESTERN SIBERIA

Moscow GENETIKA in Russian Vol 14, No 4, Jul 78 pp 1272-1275 manuscript received 16 May 77

OSIPOVA, L. P., Institute of Clinical and Experimental Medicine, Siberian Division of the Academy of Medical Sciences USSR and SUKERNIK, R. I., Institute of Cytology and Genetics, Siberian Division of the Academy of Sciences USSR, Novosibirsk

[Abstract] Allotypic Gm and Km tracers were examined in Kumandinians and Chelkanians, descendants of taiga huntsman and fisherman tribes in Western Siberia. The antigenic combinations were found by inhibition of passive hemagglutination with commercial antiserum prepares anti-Gm(a), Gm(x), Gm(f), Gm(b5), Km(1) and the corresponding anti-D sera "Biotest-Serum" (manufactured in West Germany) or "Dade" (manufactured in the United States). Measurements involved an erythrocyte count. The distributions of immunoglobulin phenotypes in respective subpopulations was subsequently determined, with that of Gm phenotypes found to be notably nonproportional, and the

distributions of immunoglobin haplotypes in the two neighboring Altai populations was also determined. The latter distributions were calculated by the A. G. Steinberg method, according to the maximum-likelihood principle. The authors thank Dr M. S. Schanfield (blood bank in Milwaukee, Wisc.) for the valuable comments and for supplying some amount of anti-Gm(f) serum. References 7: 3 Russian, 4 Western.

USSR

UDC 615.371:576.851.511].099:616.155.34

INDEX OF BLOOD NEUTROPHIL DAMAGE IN HUMANS AND ANIMALS IMMUNIZED WITH LIVE ANTHRAX VACCINE

Moscow ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOLOGII in Russian No 6, Jun 78 pp 81-84 manuscript received 30 Jun 77

SHENTSEV, I. V., SHUMILOV, G. P., TARUMOV, V. S. and DERBIN, M. I.

[Abstract] Diagnostic potential of the index of neutrophil damage (IND) was evaluated on individuals subcutaneously immunized with live anthrax vaccine STI-1 and in animal experiments. The sensitivity of this test in rabbits and guinea pigs was rather low, around 15-16.6%. The monkeys and humans inoculated at least twice were clearly sensitive to live vaccine STI-1. It has been recommended to use the IND in estimating the immunologic status of individuals vaccinated with live anthrax vaccine. References 17: all Russian.

USSR

UDC 576.851.49.097.1/.3.083.3

IMMUNOGENIC AND ANTIGENIC PROPERTIES OF TYPHOID BACILLI UNDER CONDITIONS OF CONTINUOUS CULTIVATION

Moscow ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLGII in Russian No 7, Jul 78 pp 90-94 manuscript received 8 Aug 77

ZHDANOVA, L. G., GRUBER, I. M., MASHILOVA, G. M. and SAVRANSKAYA, S. YA., Moscow Institute of Vaccines and Sera Imeni Mechnikov

[Abstract] An attempt was made to find optimal conditions for the synthesis of immunological substance and known O-, Vi and H-antigens of the typhoid microbes. Experimental data have shown that immunological properties of typhoid bacteria increase with increased dilution rate. The optimal conditions for continuous cultivation production of highly immunogenic

vaccines consisted of a dilution rate of  $0.4 \text{ hr}^{-1}$ , glucose content of 5 g/l and oxygen concentration of 50%. These conditions assure maximum production rate of O-antigen but not of the Vi- and H-antigens. Optimal production of Vi antigen requires three times higher concentration of glucose and maximum rate for the synthesis of H-antigen is reached at much lower concentrations of  $O_2$ . The dilution rate requirements are identical for all antigens. Figures 2; references 5: 3 Russian, 2 Western.

USSR

UDC 615.371:576.851.46].099

VACCINE FROM CELLULAR FRAGMENTS OF B. PERTUSSIS. COMMUNICATION 2. TOXIC PROPERTIES OF THE VACCINE

Moscow ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII in Russian No 7, Jul 78 pp 68-74 manuscript received 14 Jan 77

SHIRKO, G. N. and ZAKHAROVA, M. S., Institute of Epidemiology and Microbiology imeni Gamaleya, Academy of Medical Sciences USSR

[Abstract] A vaccine should be prepared from microbial strains with high protective power and low toxicity. Toxic properties of a new vaccine prepared from cellular fragments of ultrasonically disintegrated B. pertussis treated with ethyl ether: ether extracted pertussis antigen (EPA) and its adsorbed variant (AEPA). Both agents showed lower toxicity than the standard vaccine, based on the weight gain of test animals, while retaining the same level of protective activity. The decrease in toxicity was primarily due to lower activity of the histamine sensitization factor and the thermally-labile as well as the lymphocyte stimulating factors. A recommendation has been made to test these new vaccines in limited trials on children. Figures 4; references 13: 4 Russian, 9 Western.

USSR

UDC 616.981.42.036.1:616-008.9-097.2

EFFECT OF TISSUE ANTIGENS ON THE COURSE OF EXPERIMENTAL BRUCELLOSIS INFECTION

Moscow ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII in Russian  
No 7, Jul 78 pp 132-136 manuscript received 21 Jun 77

SAFRONOVA, V. M., LOKTEV, N. A., TARAN, I. F. and TIKHENKO, N. I., Antiplague  
Scientific Research Institute of Caucasus and Transcaucasus Stavropol'

[Abstract] The effect of tissue antigens (including autoimmune reactions) on various manifestations of brucellosis infections (immunologic, pathomorphologic and cytoenzymatic) was investigated. Homologous tissue antigen was prepared from lymph nodes, from liver and spleen of healthy guinea pigs, using the methodology of Alexeyeva; heterologous antigens were prepared analogously from individuals who died in accidents. Guinea pigs were used as experimental animals. Guinea pigs infected with a single dose of tissue antigens showed a much more pronounced pathomorphological change in the course of their disease than animals infected with the brucella culture alone. Infection of animals presensitized with tissue antigens was accompanied by considerable depression of local skin-allergenic reactions towards the brucelline as well as towards the tissue antigens. Sensitization of test animals with tissue antigens and brucelline resulted in an increased activity of acid phosphatase in blood lymphocytes, the maximum reacting being reached around the 60th day. Tissue antigens appeared to activate production of isoantibodies. References 12: 9 Russian, 3 Western.

Industrial Microbiology

USSR

UDC 577.154

GLUCOSOISOMERASE FROM ACTINOMYCES OLIVOCINEREUS 154 AND ITS IMMOBILIZATION  
ON AMINATED SILOCHROME

Moscow BIORHIMIYA in Russian Vol 43, No 7, Jul 78 pp 1294-1302 manuscript  
received 25 Oct 77

ANANICHEV, A. V., ULEZLO, I. V., REZCHIKOV, A. A., BEZBORODOV, A. M.,  
YEGOROV, A. M. and BEREZIN, I. V., Department of Chemical Enzymology of the  
Moscow State University imeni M. V. Lomonosov; Institute of Biochemistry  
imeni A. N. Bakh, Academy of Sciences USSR, Moscow

[Abstract] The title enzyme is used in industry to produce syrup from starch, a process which can alleviate demand for sugar beets and cane. This article reports the technique of its isolation from a cell-free extract of *Act. olivocinereus* 154; the product was adsorbed on DEAE-cellulose DE-52. Homogeneity of the prepared enzyme was measured by electrophoresis in polyacrylamide gel in a Reanal (Hungary) apparatus and by sedimentation analysis in a Spinco ultracentrifuge. The product was immobilized on silochrome (Moscow State University), a pore size 2400 Å and surface 30 m<sup>2</sup>/g; amination was carried out by a published method (Robinson, et al., 1971). The carrier contained 0.21 mg equiv/g aminogroups. The immobilized enzyme was found to be more heat stable and could be stored longer than the non-immobilized, soluble enzyme. Optimum pH of the immobilized enzyme was 7.5, optimum temperature 80°. K<sub>m</sub>, V and catalysis activation energy are essentially not changed by immobilization; the immobilized enzyme retains 58% of the original enzyme activity. This preparation of the immobilized enzyme is seen as rapid, efficient and industrially applicable. Figures 8; references 39: 2 Russian, 4 Russian-language non-Soviet patents, 33 Western.

USSR

UDC 577.150.7+577.154.3

GLUCOAMYLASE IMMOBILIZED ON AMINOETHYL CELLULOSE

Moscow PRIKLADNAYA BIORHIMIYA I MIKROBIOLOGIYA in Russian Vol 14, No 4,  
Jul/Aug 70 pp 548-553 manuscript received 14 Jun 77

KIM, G. I. and STAROSTINA, V. K., Special Design and Technological Office  
for Biologically Active Substances, Novosibirsk

[Abstract] The use of enzymes as catalysts in the process of converting starch to glucose by saccharification can be very effective. Glucoamylase is such an enzyme, whose noncorrosiveness make it much more economical and efficient than acidic hydrolysis. An experimental study was made with

glucoamylase immobilized on aminoethyl cellulose, this substance being insoluble in water, stable, mechanically strong, and not requiring any possibly cancerogenic binders. Various domestic and foreign grades of this sorbent were used. The enzyme specimen had been extracted with acetone from *Endomycopsis* species 20-9 and also grown in a culture fluid. After sorption and filtration, the sorbent carrying the enzyme were treated with 5% glutaric aldehyde in 0.2 M sodium phosphate as a buffer (pH = 6.5-6.7). This process was duplicated in the presence of starch, with appropriate modification of the treatment. The immobilization rate was measured, in terms of activity, as a function of immobilization time, the temperature, the buffer pH, and the buffer concentration. The activity of immobilized glucoamylase became 2-3 times higher in the presence of starch than without it, with 13.5-28% of the initial activity retained after immobilization, while the presence of glucose had no such effect. The authors thank P. I. Salganik and S. N. Zagrebel'nyi for the continuous interest in this study and for participating in the discussion of the results. Figures 4; references 18: 4 Russian, 14 Western.

USSR

UDC 577.156

#### PROPERTIES OF IMMOBILIZED ACID PROTEINASE FROM *ASPERGILLUS AWAMORI*

Moscow PRIKLADNAYA BIOKHIMIYA I MIKROBIOLOGIYA in Russian Vol 14, No 4  
Jul/Aug 78 pp 554-557 manuscript received 19 Jul 77

SAMOSHINA, N. M., MOTINA, L. I., ORESHCHENKO, L. I., FOKINA, S. S. and  
NAKHAPETYAN, L. A., All-Union Scientific Research Institute of Bioengineering,  
Moscow

[Abstract] A study was made of acid proteinase extracted from *Aspergillus awamori* and immobilized by covalent bonding on silochrome treated with glutaric aldehyde. Immobilization was found to shift the optimum pH and to narrow its range from 2.5-2.9 to 1.8-2.0, which, in the absence of autolysis of the enzyme and of acidic hydrolysis of the substrate, could only be attributed to changes in the enzyme properties. Incubation in a universal buffer solution with a pH = 1.9 at various temperatures revealed that, while the activity of the natural enzyme had been reduced by 70% during the first hour at 60°C and not been reduced at all during four hours at 30-50°C, the activity of the immobilized enzyme was already reduced during the first hour, by an amount proportional to the temperature. A dry enzyme preparation stored at 36°C was found to have lost 40-50% of its activity after 5 days. A moist enzyme preparation stored at 4°C, immediately after filtration, was found to have lost almost none of its activity after 2 months. The stability of the immobilized enzyme was found to be much lower. Figures 2; references 9: 3 Russian, 6 Western.

## Industrial Toxicology

CZECHOSLOVAKIA

UDC 614.255.1:361.1:616-057:615.9

MEDICAL SUPERVISION BY PLANT PHYSICIANS OF EMPLOYEES IN CONTACT WITH TOXIC SUBSTANCES

Prague PRACOVNI LEKARSTVI in Czech Vol 30, No 1-2, Feb 78 pp 42-48 manu-crops received 1 Dec 76

FUCHS, A. and DAVID, A., Institute of Hygiene and Epidemiology, Center for Labor Hygiene and Occupational Diseases, Prague

[Abstract] The paper was first presented at the Congress of Plant Physicians at Ostrava, 11-12 November 1976. Some 25 years ago industrial poisonings were the most frequently met occupational diseases. Technical improvements in industry reduced the number of poisonings to very low levels. During 1975 only 327 poisonings were classified as occupational diseases. Of these 105 cases were due to CO inhalation, 77 were caused by organic solvents, 17 poisonings were attributed to benzene derivatives, and 13 to other aromatic hydrocarbons. Forty-four cases were due to an attack on the respiratory system by irritating gases, and 13 poisonings were caused by organophosphorus compounds. All other causes numbered less than 10 per year per an individual poisonous compound. The main duty of a plant physician is the prevention of the poisonings; treatment of the affected is their second duty. Prevention must rest on technical control of the production processes, determination of maximum allowable exposure levels, and an early diagnosis of a poisoning. Organization of first aid facilities and a satisfactory number of first aid stations is of the greatest importance. Transportation of the victims to suitably equipped hospitals must be provided. There must be a sufficient number of people trained in providing available first aid. It is necessary to equip the first aid station with suitable medical supplies. Methods for fast determination of the cause of the poisoning and of the probable amount of the poison ingested must be available and a record of these data must accompany the patient to the hospital.

USSR

UDC 616.12-072.7:615.9:546.42

FEATURES OF CARDIAC FUNCTION OF WORKERS IN THE STRONTIUM SALT INDUSTRY

Kiev VRACHEBNOYE DELO in Russian No 6 Jun 78 pp 29-30

PYATAK, O. A., professor, and SHUKHNIN, YE. S. and ZASLAVSKAYA, A. G., candidates of medical sciences, Department of Therapy of the Pediatric Faculty of Kiev Medical Institute; Department of Hospital Therapy of Donetsk Medical Institute

[Abstract] The unfavorable action of chemical substances on cardiac function and on ability to work is seen very often in metal industries. The work of Cattell and Henderson (1970) on the damaging effect of strontium salts on the myocardium is cited to introduce findings reported in this article on workers employed in strontium industries. The patients (122) aged 26 to 45, at work from one to 10 years, were subjected to EKG examinations. Fifty three (44%) were found to manifest substantial changes in the EKG indicative of myocardial pathology. Specific changes include a type of hypercalemia, subendocardial hypoxia and a high blood level of strontium. Content of strontium and length of work in the industry correlated closely with the clinical evidence of cardiovascular pathology. These changes must be taken into account in efforts to improve the health status and conditions of labor in the strontium industry. References 4, Russian.

USSR

UDC 616.839+616.45-07:612.014.4

FUNCTIONAL CONDITION OF THE SYMPATHO-ADRENAL SYSTEM DUE TO EXPOSURE TO THE ACTION OF CHLOROORGANIC PESTICIDES

Kiev VRACHEENOYE DELO in Russian No 6 Jun 78 pp 127-130

KUZ'MINSKIY, U. A. and IVANITSKIY, V. A., Laboratory of Biochemistry of the All-Union Scientific Research Institute of Hygiene and Toxicology of Pesticides, Polymers and Plastics

[Abstract] This is a report of analysis of response of the sympatho-adrenal system to the action of chloroorganic pesticides; status of that system is evaluated by assay of excretion of catecholamines (adrenaline and noradrenaline), their precursors (DOPA and dopamine) and metabolite (vanillyl-mindalic acid, VMA) in adult rats exposed to polychlorocamphene (PCC) and gamma hexachlorocyclohexane (HCCH). Excretion of the products were also assayed in people exposed to HCCH. A single administration of PCC to rats did not have an appreciable effect on secretions of the listed compounds. Protracted administration, however, did; adrenaline and noradrenaline secretion, their precursor, dopamine, and the metabolite VMA increased, with

simultaneous decrease in secretion of DOPA, the precursor of dopamine. It is felt that the activity of the sympathetic link of the sympatho-adrenal system is greater than the hormonal link. Prolonged administration of HCCH to rats caused a rise in adrenaline secretion and decrease in dopamine; there was a slight tendency of noradrenaline to decrease and MVA to rise. This suggests that with HCCH the hormonal action is greater. Analogous data with HCCH are seen in people (15). The difference in effect of the pesticides may be linked to their chemical nature. References 6, Russian.

USSR

UDC 612.013.32+612.015.348:615.9:546.22

STATE OF CARBOHYDRATE AND PROTEIN METABOLISM IN WORKERS ENGAGED IN SULFUR SMELTING

Kiev VRACHEBNOYE DELO in Russian No 6 Jun 78 pp 125-127

DUBITSKIY, I. N., Lvov Scientific Research Institute of Epidemiology and Microbiology

[Abstract] A study is reported of carbohydrate and protein metabolism in workers at an unidentified underground sulfur smelting complex. Workers (196) ages 30-40, on the job one to five years were separated into two groups for the carbohydrate assays: first group continuously exposed to sulfur ( $H_2S$ , sulfuric acid, sulfur dust), second exposed periodically. Studies included blood sugar (photocolorimetry), blood lactic and pyruvic acid, and serum aldolase activity. Protein studies were run on two groups: first group engaged in sulfur smelting, the second not in contact with harmful substances. Studies included total protein (refractometrically), protein fractions, level of total and residual nitrogen, and, serum transaminase (method developed at the Institute of Biological and Medical Chemistry, Academy of Medical Sciences USSR). Pyruvic and lactic acid levels did not exceed physiological norms but were higher in workers continuously exposed to sulfur, suggesting a hypoxia; aldolase activity of the latter group was also lower. Sugar levels did rise in the sulfur exposed group, suggesting a hyperglycemia evoked by hypoxia. The sulfur exposed group showed a decrease in serum albumins, increase in alpha-globulins and gamma-globulins. No statistically reliable change was seen in total protein. Sulfur-exposed workers showed some increase in total and residual nitrogen in the blood. Transaminase activity change is difficult to assess. Disturbance of carbohydrate and protein metabolism is concluded to occur after exposure of workers to sulfur and protection must be assured. Figure 1; references 3, Russian.

USSR

UDC 616-001.36-62:615.9

EXOTOXIC SHOCK DUE TO ACUTE POISONING IN CHEMICAL ETIOLOGY

Moscow ANESTEZIOLOGIYA I REANIMATOLOGIYA in Russian, No 3, May/Jun 78  
pp 16-20

LUZHNIKOV, YE. A., professor, director: Science Department for Curing Acute Poisoning, Moscow Scientific Research Institute of First Aid imeni N. V. Sklifosovskiy, PETROVA, L. I., SAVINA, A. S., NOVIKOVSKAYA, T. V., KOSTOMAROVA, L. G. and IL'YASHENKO, K. K.

[Abstract] A study was made of patients with acute exogenous poisoning due to cauterizing fluids, dichloroethane, organophosphorous insecticides, and soporifics. In the study participated 192 persons (112 men and 80 women, not over 52 years old). Cardiac, circulation, and shock indicators were measured by dilution of blue pigment (Evans), by radiocardiography, by electroplaetis-mography, and with albumen tracer. Also the central venous pressure was measured and electrocardiograms were taken. The results indicate that progressive toxic impairment of the permeability of cellular membranes, along with hypovolemia, are the main sources of pathogenesis. The cure should include, along with detoxication of the body, also correction of the hypovolemia and restoration of the acid-base balance as well as correction of the rheological and the coagulatory blood characteristics. References 8: 5 Russian, 3 Western.

USSR

UDC 612.85.014.45

CHARACTERISTICS OF THE EFFECT OF NOISE ON HEARING AND ON THE HEMODYNAMICS OF THE INNER EAR

Moscow VESTNIK OTORINOLARINGOLOGII in Russian, No 4, Jul/Aug 78 pp 72-76  
manuscript received 6 Dec 77

PAL'GOV, V. I., Chair of General Hygiene, Kiev Institute of Medicine, TETR'YAKOVA, T. A., Chair of Otorhinolaryngology, Zaporozhe Medical Institute

[Abstract] Functional impairment of hearing and of the hemodynamics in the inner ear due to noise was studied in an acoustic isolation chamber. Four series of tests were performed with a 1000 Hz tone, two of them with varying noise levels (increasing from 85 to 105 dB and decreasing from 105 to 85 dB respectively) and two of them with a constant 95 dB noise level. In the last test series 50% intelligible speech was added. The dynamics of both the hearing threshold and of the directivity at 1000, 2000, and 4000 Hz were measured. Additional strain on the ear during exposure to noise was found

to increase the hearing fatigue. Otorheovasograms indicate that noise causes a vascular spasm, proportional to the hearing fatigue, which impairs the blood circulation in the region of the labyrinth artery. As to the practical implications of the results of this study, with regard to working conditions, it is preferable in a factory to schedule high-noise operations first and low-noise operations last. Figures 2; references 6: 5 Russian, 1 Western.

USSR

UDC 615.916:546.265.1-07

NEW CONCEPTS OF THE PATHOGENESIS OF CHRONIC CARBON DISULFIDE POISONING

Kiev VRACHEBNOYE DELO in Russian No 7, Jul 78 pp 5-11

KUNDIYEV, YU. I., corresponding member, Academy of Medical Sciences USSR, POPOV, T. A., KRASNYUK, YE. P. and LUKHTAY, V. A., Kiev Scientific Research Institute of Labor Hygiene and Occupational Diseases

[Abstract] The literature was reviewed with respect to current concepts regarding the pathogenesis of CS<sub>2</sub> poisoning, a rather common problem in industrial hygiene. Evaluation of the information that has accumulated on the pathophysiologic mechanisms indicates that the key triggering mechanism consists of inhibition of mixed function oxidases which, in one study involving 55 chronically exposed subjects without clinical signs, showed activities of ca. half or less than those detected in healthy, unexposed, control subjects. Such inhibition leads to disruption in the metabolism of such key metabolites as cholesterol, histamine, serotonin, catecholamines, etc., and their eventual accumulation in the body with negative consequences. Figures 1, references 45: 8 Western, 37 Russian.

USSR

UDC 616.233-002.2+616.233-003.7

MULTIFACTORIAL ANALYSIS FOR EVALUATING THE RELATIONSHIP BETWEEN CHRONIC BRONCHITIS AND DUST IN MACHINE BUILDING WORKERS

Kiev VRACHEBNOYE DELO in Russian No 7, 1978 pp 131-134

KLEYNER, A. T., doctor of medical sciences, KOPILOVICH, L. YE., candidate of physicomathematical sciences, SONKIN, I. S., candidate of medical sciences, KHIZHNYAKOVA, L. N., SHEYNIN, B. YA., candidate of medical sciences, YEFREMOVA, V. A., Scientific Research Institute of Labor Hygiene and Occupational Diseases, Kharkov

[Abstract] A computer based system is described for calculating the correlation between the incidence of chronic bronchitis among foundry workers and 30 factors of medical and hygienic interest (sex, age, smoking, dust exposure, noxious gases, etc.). Examination of factors applicable to 1000 foundry workers of both sexes revealed that the factors most closely related to morbidity were dust levels, noxious gases, duration of smoking, and bronchopulmonary infections. References 12, Russian.

USSR

UDC 615.917:547.412.4-015.4-08

CLINICAL SIGNS OF ACUTE DICHLOROETHANE POISONING AND PATHOGENETIC PRINCIPLES OF TREATMENT

Kiev VRACHEBNOYE DELO in Russian No 7, 1978 pp 134-139

SHCHEPOTIN, B. M. and BONDARENKO, YA. D., Department of Propedeutics of Internal Diseases, Kiev Medical Institute

[Abstract] The clinical symptomatology and outcome of treatment is presented for 248 patients poisoned with dichloroethane; the patients ranged in age from 15 to 72 years and were poisoned as a result of carelessness. The subjects either ingested 10 to 150 ml of the chemical or inhaled its vapors for 20-30 min or even an hour. On the basis of clinical evaluation 4 basic syndromes were identified as resulting from acute dichloroethane poisoning: toxic encephalopathy (63.7%), acute gastritis and gastroenteritis (84.6%), acute cardiovascular insufficiency (57.7%), and toxic hepatitis with liver failure (35.4%). The treatment was essentially symptomatic and designed to achieve detoxification. The patients received 2 liter of 5% glucose as an intravenous drip in combination with vitamins B<sub>1</sub>, B<sub>6</sub>, C and nicotinamide, were subjected to gastrointestinal lavage, 1% intravenous glutamic acid (20 ml), 5% aminoacaproic acid (up to 30 ml), etc. The mortality rate in the present series of patients was 39.9% (98 patients). References 12, Russian.

Marine Mammals

USSR

UDC 617-089.5-031.81+591.186:599.537

ANESTHETIZATION OF DOLPHINS WITHOUT BLOCKAGE OF THEIR NATURAL RESPIRATION

Leningrad ZHURNAL EVOLYUTSIONNOY BIOKHIMII I FIZIOLOGII in Russian Vol 14,  
No 4, Jul/Aug 78 pp 410-411 manuscript received 4 Jan 77

MESHCHERSKIY, R. M., MENYAYLOV, N. V., SHEPELEVA, I. S., KORENEV, I. I.,  
TOPOROV, YU. A., GORELOV, I. A. and IVANOV, I. S., Institute of Psychology,  
Academy of Sciences USSR, Moscow; Department of Anesthesiology and Resusci-  
tology, Central Institute of Traumatology and Orthopedics imeni N. N.  
Priorov, Moscow

[Abstract] Healthy dolphins (*Tursiops truncatus*) were caught at the Black  
Sea shore and anesthetized after a proper period of adaptation. Conventional  
Thiopental and Pentran were found to be unsuitable for these animals. Pre-  
medication with atropine (1.0 mg per 50 kg), and Seduxen (5.0 mg per 100 kg)  
followed by treatment with oxybutyrate (1 g per 50 kg), Droperidol (12.5 mg  
per 100 kg), and Phentanyl (0.5 mg per 100 kg), all injected intravenously,  
induced "natural" sleep, without blockage of the respiration, and a satis-  
factory anesthesia for 1-1/2 to 2 h. References 8: 1 Russian, 7 Western.

Microbiology

USSR

UDC 616.981.553

PROBLEMS OF SYNDROMOLOGY AND RATIONAL THERAPY OF BOTULISM

Moscow SOVETSKAYA MEDITSINA in Russian No 6 Jun 78 pp 147-148 manuscript received 11 Oct 77

BATEYKO, V. YA., candidate of medical sciences, Zaporozhe Infectious Diseases Clinical Hospital No 2

[Abstract] This is a report of experience with 80 botulism patients, treated in the "statsionar" hospital in the last 4 years. They included 5 children, ages 5 to 14, and 75 adults, ages up to 60. Disease was due to use of home preserved food: meat--45 patients, fish--23, mushrooms and vegetables--12. Incubation period was 1 to 3 days but also up to 9 days. Symptoms could be separated into five major groups: infectious-toxic, dyspeptic, ophthalmic, bulbar and myasthenic. Pathogenetic therapy included use of botulin serum, anticholinesterase preparations, strychnine and anabolic hormones. References 3, Russian.

USSR

UDC 615.384.014.41"401.7":576.8.083.3

PROSPECTS FOR USE OF OUTDATED BLOOD SUBSTITUTES PRODUCED IN THE USSR

Moscow ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOLOGII in Russian No 6, Jun 78 pp 85-89 manuscript received 12 Aug 77

RASKIN, B. M., MEL'NIKOVA, V. A., DENISOVA, S. V., PEREL'MAN, YE. V., LOBOVA, YE. A. and SHTANCHAYEVA, S. M., Moscow Scientific Research Institute of Vaccines and Sera imeni Mechnikov

[Abstract] This investigation was concerned with the possibility of utilizing outdated blood substitutes (hydrolysine, casein hydrolysate and aminopeptide) for the preparation of microbiological nutrient media for cultivation of bacteria. The study showed that the chemical composition of outdated blood substitutes has not changed even 2 to 3 years past the expiration date. Individual test runs showed that outdated aminopeptide, casein hydrolysate and hydrolysine could indeed be used in preparation of agar media, especially when combined with yeast extracts. Figures 2, references 10, Russian.

USSR

UDC 576.851.513.095.57.098.396.332

REACTION OF THE L-FORMS OF BACILLUS SUBTILIS WITH TRANSFIXING AND TRANSFORMING DNA

Moscow ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII in Russian  
No 7, Jul 78 p 141 manuscript received 27 Jun 77

SABEL'NIKOV, A. G., TARTAKOVSKIY, I. S. and PROZOROVSKIY, S. V., Institute of Epidemiology and Microbiology imeni Gamaleya, Academy of Medical Sciences USSR, Moscow

[Abstract] The L-forms of *B. subtilis* bind approximately the same amount of native DNA as the competent *B. subtilis* cells, the denatured DNA being bound more actively by both recipients. The L-forms created infection centers reacting with transfixing DNA of the AP50 phage, even though the effectiveness of transfixation was lower than in the competent cells. Precise quantitative data on the yield of infection centers in both systems was not obtained.

USSR

UDC 576.858.75.01:575.113

MIGRATION OF INFLUENZA VIRUS GENES IN THE BIOSPHERE (HYPOTHESIS AND ITS SUBSTANTIATION)

Moscow ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII in Russian  
No 7, Jul 78 pp 17-21 manuscript received 31 Jan 78

ZHDANOV, V. M., L'VOV, D. K. and ZAKSTEL'SKAYA, L. YA.

[Abstract] It has been shown in the past that some viruses disappear from the general circulation, remaining dormant or hidden for decades, and then reappearing again among the human population. Three hypotheses have been expressed as to their whereabouts in the interim time. One, they really do not disappear but are preserved in the population causing only sporadic infections; two, such viruses develop a special reaction with the human body without causing any illness, and three, circulation of human viruses continues in the animal kingdom, particularly among birds. Actually, the situation may be rather complex; the viruses are not just "preserved"; they may undergo a number of recombinations. All of this led to a hypothesis that in the biosphere the viruses circulate not just as specific types of influenza viruses, but as individual genes in a system of recombinants. The return into the human population may occur via the reconstruction of the original virus or by inclusion of other genes. References 28: 16 Russian, 12 Western.

USSR

UDC 615.373:576.8.077.3

STABLE PAPER INDICATOR SYSTEMS FOR RAPID IDENTIFICATION OF MICROORGANISMS

Moscow ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII in Russian  
No 7, Jul 78 pp 112-115 manuscript received 15 Aug 77

BLOKHINA, I. N., LAVROVSKAYA, V. M. and AL'TMAN, R. SH., Gor'kiy Scientific  
Research Institute of Epidemiology and Microbiology

[Abstract] Because of the fact that industrial production of indicator systems in the USSR is not functional, an attempt was made to enlarge the selection of stable paper indicator systems by developing optimal synthetic methods for such agents and by evaluating their application in the field. A paper disc was developed for the determination of urease, cutting the analytical time from 1-2 days to 30-40 min. A standardized method was developed for identification of indol formation. And, finally, stable indicator systems were prepared for the determination of the activity of cytochromoxidase and decarboxylase. All of these paper indicators are protected with a film cover, so that their sensitivity is preserved for a long time. References 9: 5 Russian, 4 Western.

Molecular Biology

USSR/GDR

UDC 576.851.252.097.22.095.57

TRANSMISSION OF THE DRUG RESISTANCE PLASMID FROM STAPHYLOCOCCUS EPIDERMIDIS TO STAPHYLOCOCCUS AUREUS IN MIXED CULTURES

Moscow ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOLOGII in Russian, No 6 Jun 78 pp 47-50 manuscript received 1 Nov 77

WITTE, W., Institute of Experimental Epidemiology, Wernigerode, GDR, AKATOV, A. K., ZUYEVA, V. S. and KHATENEV, M. L., Institute of Epidemiology and Microbiology imeni Gamaleya, Academy of Medical Sciences USSR, Moscow

[Abstract] Data have been reported on the transmission of plasmids controlling resistance to penicillin and chloramphenicol from *Staphylococcus epidermidis* to *S. aureus* and in reverse. Simultaneous transmission of both plasmids to the recipient was observed at the level of about 40%. The resistance plasmids could possibly have been transmitted from *S. epidermidis* to *S. aureus* on human skin or mucous membrane. A plasmid resistant to chloramphenicol was found in *S. epidermidis* 1065/77, even though it was not expressed in this strain, but could be transferred to and was expressed in *S. aureus* strain, leading to the conclusion that this plasmid was transferred *in vivo* to *S. epidermidis* by *S. aureus*. References 11: 1 Russian, 10 Western.

USSR

UDC 577.158

NON-COVALENT IMMOBILIZATION OF GLYCERALDENYDE-3-PHOSPHATEDEHYDROGENASE ON ANTIBODIES AND Fab-FRAGMENTS OF ANTIBODIES COUPLED TO SEPHAROSE

Moscow BIOKHIMIYA in Russian Vol 43 No 7 Jul 78 pp 1277-1284 manuscript received 18 Oct 77

MURONETS, V. I., CHEREDNIKOVA, T. V. and NAGRADOVA, N. K., Laboratory of Molecular Biology and Bioorganic Chemistry imeni A. N. Belozerskiy, Moscow State University, Moscow

[Abstract] Immobilization of enzymes (e.g., for study of their structure and catalytic activity) usually employs covalent binding of enzymic amino, carboxylic and SH-groups with activated carriers. To avoid interference, by this procedure, with active centers and mobility, the authors have used non-covalent immobilization with antibodies. This article describes the preparation of a combination of the title enzyme with specific antibodies, which were immobilized on sepharose 4B, activated with CNBr. Two ways were used, i) preparation of a "sandwich", i.e., a complex of sepharose-enzyme-antibody-enzyme, and ii) joining of the enzyme to the antibody, covalently

bound with sepharose. Non-covalent immobilization of the enzyme was achieved on antibodies and Fab-fragments bound with sepharose. The immobilized enzyme retains about 90% of its catalytic activity; the catalysis optimum pH and  $K_m$  value of the immobilized enzyme was changed. The tetrameric molecule of the enzyme, immobilized on the antibodies and Fab-fragments dissociates into dimers; the dimeric form is catalytically active and can reassociate with soluble dimers. Figures 4; references 16: 6 Russian, 1 Polish, 9 Western (four by Soviet authors).

USSR

UDC 576.851.48.095.58

TRANSMISSION OF THE PLASMID RIdrd19 FROM E. COLI TO HAFNIA

Moscow ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOLOGII in Russian No 6 Jun 78 pp 42-47 manuscript received 15 Jun 77

STRAKHOVA, T. S., KUZNETSOVA, V. N., POPOV, YE. I., RAVIN, V. K. and GOL'DFARB, D. M., Institute of General Genetics, Academy of Sciences USSR, Moscow

[Abstract] Transmission of the depressed plasmid RIdrd19 from E. coli to Hafnia was investigated. As a rule, this plasmid was transmitted at a low frequency, in the range of  $10^{-7}$  to  $10^{-9}$ ; it was dependent on the Hafnia strain used. Hafnia 614 was determined to be the most competent recipient for this plasmid. Tra-operon of the plasmid RIdrd19 functioned in Hafnia 614 as effectively as in E. coli. The plasmid itself was found to be unstable on cold storage, and was spontaneously eliminated from the cells. The quantity of satellite DNA observed in CsCl-EB gradients during the centrifugation of the material from Hafnia/RIdrd19 cells, cultured at 26-30°C, was lower than from the cells cultured at 37°C. E. coli/R<sub>+</sub> cells did not show such a difference. Even though the mechanism of this is unknown, it indicates suppression of the formation of CCC form of the plasmid RIdrd19 in Hafnia cells at 26-30°C. References 17: 6 Russian, 11 Western.

USSR

UDC 576.851.513.095.18:547.962.1

USE OF PROTAMINE IN TRANSFECTION OF INCOMPETENT BACILLUS SUBTILIS CELLS

Moscow ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOLOGII in Russian,  
No 6 Jun 78 p 146 manuscript received 27 Jun 77

SABEL'NIKOV, A. G., TARTAKOVSKIY, I. S. and IL'YASHENKO, B. N., Institute  
of Epidemiology and Microbiology imeni Gamaleya, Academy of Medical Sciences  
USSR, Moscow

[Abstract] Incompetent *B. subtilis* cells became capable of transfecting  
the DNA from SP50 phage after treatment with protamine. However, the trans-  
fection activity of two DNA preparations studied was too low to make any  
precise quantitative observations possible.

USSR

UDC 576.858.6+547.963.3

PRESENCE OF H-1 HISTONE IN THE CHROMOSOME OF SV-40 VIRION ISOLATED FROM  
NUCLEI OF INFECTED CELLS

Moscow DOKLADY AKADEMII NAUK SSSR in Russian No 2 1978 pp 485-487 manu-  
script received 14 Apr 78

NEDOSPASOV, S. A., BAKAYEV, V. V. and GEORGIYEV, G. P., corresponding mem-  
ber, Academy of Sciences USSR, Institute of Molecular Biology, Academy of  
Sciences USSR, Moscow

[Abstract] Techniques are described for the isolation of SV-40 minichromo-  
somes and complete virions from the nuclei of infected CV-1 monkey cells,  
involving extraction and centrifugation in a 5-25% sucrose density gradient.  
Subsequent studies involving polyacrylamide disc electrophoresis of the  
virions and minichromosomes revealed the presence of H-1 histone fraction  
in stoichiometric proportions to the other histone fractions, i.e., one H-1  
molecule per nucleosome. These findings confirm the presence of H-1 his-  
tone in SV-40 virions and indicate similarity to eukaryotic chromosomes.  
Figures 3; references 13, Western.

USSR

UDC 575.114+577.155

ISOLATION OF PROMOTER FRAGMENTS FROM HYDROLYSATES OF DNA OF PHAGE LAMBDA OBTAINED BY ACTION OF BsU R ENDONUCLEASE. DETECTION OF TWO NEW PROMOTERS FOR THE RNA-POLYMERASE OF E. COLI WITHIN THE  $\lambda b_2$ -REGION

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 241, No 3, 21 Jul 78  
pp 710-713 manuscript received 2 Mar 78

VASILENKO, S. K., GRACHEV, M. A., ZAYCHIKOV, YE. F. and KRAVCHENKO, V. V., Novosibirsk Institute of Organic Chemistry, Siberian Division of the Academy of Sciences USSR; Special Design and Technological Office for Biologically Active Materials, Novosibirsk

[Abstract] Splitting of complexes of RNA-polymerase and DNA-endonucleases (restriction) with subsequent sorption on nitrocellulose filters served to isolate promoter fragments for the DNA of phage lambda obtained by action of the BsU R restriction endonuclease. For the experiment were used the DNA of  $\lambda$ c1,  $\lambda$ b<sub>2</sub> and  $\lambda$ gt- $\lambda$ c phages, which had been produced by the By method, with the DNA of restriction endonucleases from *B. subtilis* X5 (BsU R), *E. coli* NM 182 (EcoRI), and *B. amyloliquifaciens* H (BamHI). Hydrolysis of the DNA and subsequent gel-electrophoretic partition of promoter fragments yielded fragments bsu-1,2,3,4,5,6. A bsu-2 fragment was extracted from the hydrolyzate of gt-c but did not appear in the hydrolyzate of the  $\lambda$ b<sub>2</sub> DNA. This fragment can thus be definitively located within the right-hand segment of the  $\lambda b_2$  deletion and its promoter ( $P_{att}$ ) in the immediate vicinity of the sa' segment to the left of the int. region. Noteworthy is also the fragment bsu-5 promoter ( $P'_R$ ), the dextrodirectional transcription which confirms that a product of a Q gene is its antiterminator rather than activator. The dextrodirectional transcription from bsu-1 and bsu-2 fragments indicates that they, indeed, contain promoters and not simple segments of RNA-polymerase interlinkages. Figures 3; references 15: 2 Russian, 13 Western.

USSR

UDC 577.547.963.32

HETEROGENEITY OF THE 5.8S RNA OF BAKERS YEASTS EXPLAINED BY THE SPECIFICITY  
OF THE TRANSCRIBED SPACER STRUCTURE

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 241, No 3, 21 Jul 78  
pp 717-719 manuscript received 28 Mar 78

SKRYABIN, K. G., KRAYEV, A. S. and BAYEV, A. A., academician, Institute of  
Molecular Biology, Academy of Sciences USSR, Moscow

[Abstract] The present study employed clones of *Escherichia coli* carrying  
parts of the ribosomal DNA of *S. cerevisiae* supplied by T. Pete and D.  
Botstein from a yeast genome bank at the Massachusetts Institute of Techno-  
logy. A structural analysis of the transcribed inner spacer reveals several  
peculiar features, namely a distinct predominance of AT pairs as well as  
the presence of A and T clusters, which explain the heterogeneity of 5.8S  
RNA due to differences in structural genes. The authors thank P. M.  
Rubtsov, who has plotted the splitting chart for the  $R_I D$  fragment of the  
TaqI restriction endonuclease and for his participation in discussion of  
results in the course of their evaluation. Figures 4; references 15: 1  
Russian, 14 Western.

Pharmacology

BULGARIA

METHOD FOR OBTAINING MORPHINE AND CODEINE FROM OPIUM

Sofia FARMATSIYA in Bulgarian Vol 28 No 1, 1978 pp 20-24 manuscript received Dec 76

KAMEDULSKI, V. T., AVRAMOVA, ST. M. and TONEV, I. G., Development and Application Base, Farmakhim State Economic Trust, Sofia

[Abstract] An improved method is described for the production of morphine and codeine from opium based on aqueous-calcium extraction. Neutralization of calcium morphinate with oxalic acid is introduced, resulting in complete sedimentation of the calcium ions and significant reduction of ballast substances. Separation of the extracts from the cakeoil is easy and complete. Total depletion of the opium is achieved more rapidly than in the case of aqueous extraction. The calcium morphinate remains stable at temperatures up to 70°C. Morphine of high purity is obtained, permitting its direct methylation and precipitation in isopropanol. Codeine is obtained from the mother liquors through extraction with a toluene-isopropanol mixture. References 9: 1 Bulgarian, 2 Russian, 6 Western.

CZECHOSLOVAKIA

UDC 615.478-089.5:613.15-07

RESULTS OF ANALYSIS OF AIR QUALITY IN SURGICAL THEATRES DURING THE USE OF  
THE HALOTHANE ANESTHESIA

Prague PRACOVNI LEKARSTVI in Czech Vol 30 No 1-2, Feb 78 pp 39-42 manuscript  
received 31 Dec 76

KALAB, P.; Kraj Station of Hygiene, Department for Occupational Hygiene,  
Brno

[Abstract] Halothane is an anesthetic manufactured by the Czechoslovak firm "Leciva Praha" and is used extensively in that country. It is 2-bromo-2-chloro-1,1,1-trifluoroethane. A study of the air composition in three various Brno hospitals was made; halothane, ethanol and di-ethyl ether were determined in the samples. East German Standards recommend a maximum concentration of 50 mg/m<sup>3</sup> of the compound in the air. Because of the inevitable presence of ethanol and ether in the atmosphere this value should be reduced to 44 mg/m<sup>3</sup>. In the air around the station of the anesthesiologist these values were exceeded in all of the investigated hospitals. In the rest of the rooms, the limits were not exceeded. Lowest levels were found in theatres with a forced air circulation system. Next best were theatres with a system of closed circulation of the patients' respiratory atmosphere. The worst results were found during operations on children where the patients breathe out the anesthetic. It is recommended that all theatres be provided with a forced air circulation system. Figure 1, references 12: 7 Czech, 1 East German, 4 Western.

USSR

UDC 616.831.322-004-092:616.36-008.6

TOXIC ACTIVITY OF HEPATIC TISSUE

Moscow PATOLOGICHESKAYA FIZIOLOGIYA I EKSPERIMENTAL'NAYA TERAPIYA in Russian No 3 May/Jun 78 pp 60-64 manuscript received 13 May 77

GAL'PERIN, E. I., GABRIELYAN, N. I., DEMIDENKO, G. I., MOGIREVA, I. A. and SHCHERBANEVA, O. I., Section of Clinical and Experimental Hepatic Surgery of the Institute of Organ and Tissue Transplantation, Ministry of Health USSR, Moscow

[Abstract] Gal'perin has earlier (1976) shown that extracts of ischemic liver possess cerebrotoxic activity. In this article are reported results of studies to clarify the nature of the carrier of the toxic activity of hepatic extracts. These were obtained from ischemic livers of rats in a manner earlier described (1976). A scheme for processing the liver extract is shown. The toxic factor is, on the basis of physical chemical properties, believed to be a protein. Its appearance is connected with a histiogenic product of disturbed protein metabolism; the manifestation of a toxic substance in the ischemic-necrotic tissue may be a regular reaction in the functioning of hepatic tissue under extremal conditions. Examination of the subcellular orientation of the toxic factor indicated that the activity of the toxic extracts involves subcellular fractions which sediment at 18,000 g; subsequent centrifugation does not yield toxicologically active precipitates or supernatants. It is proposed that the toxic activity is associated with a mitochondrial-lysosomal fraction. References 13: 9 Russian, 4 Western.

USSR

UDC 615.322:582.635.34):615.453.62.012

DEVELOPMENT OF TECHNOLOGY OF PREPARATION OF PSOBERAN TABLETS

Moscow FARMATSIYA in Russian No 4 Jul/Aug 78 pp 55-57 manuscript received 7 Oct 77

TILLYAYEV, M. K., ABDULLAYEV, P., RAKHMATULLAYEV, T. U. and SHAKIROV, T. T., Institute of Chemistry of Plant Substances, Academy of Sciences UzbekSSR; Tashkent Chemical Pharmaceutical Plant

[Abstract] Psoberan is a natural mixture of two furocoumarins, psoralen and bergapten, extracted from the leaves of Central Asian varieties of figs (*Ficus carica* L.). It is used medically in treatment of vitiligo. Tablets are prepared with added sugar which is a biologically compatible additive. Tablets are hand pressed with addition of starch (up to 10%) and calcium

stearate (1%). Recommended amounts of psoberan, sugar, starch and calcium stearate are given and, also, hand pressure to be used. The product is assayed by pharmacopeia standards. References 6, Russian.

USSR

UDC 576.851.45.097.22:615.33(547)

SENSITIVITY OF SOME STRAINS OF TULAREMIA MICROBE OF THE Holarctic RACE, ISOLATED IN THE KAZAKH SSR, TOWARDS THE DIFFERENTIAL DOSE OF ERYTHROMYCINE AND OLEANDOMYCINE

Moscow ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOLOGII in Russian No 6 Jun 78 pp 119-121 manuscript received 31 May 77

CHIMIROV, O. B., Central Asia Antiplague Scientific Research Institute Alma-Ata

[Abstract] Experimental results have shown both sensitive and resistant strains of the tularemia microbes of holarctic race towards erythromycine and oleandomycine. Because of the fact that all infected mice (even single cell infections) have died, it was not possible to differentiate between the virulence of the resistant and sensitive strains. No correlation was found between the biochemical activity of these cultures and their sensitivity towards the antibiotics. This test cannot be used for the differentiation of the geographic races of tularemia pathogen. References 6, Russian.

USSR

UDC 612.014.46.017.2(049.3)

GENERAL-BIOLOGICAL ESTIMATION OF BODILY ADAPTATION TO CHEMICAL FACTORS IN THE ENVIRONMENT

Moscow GIGIYENA I SANITARIYA in Russian, No 7 Jul 78 pp 88-91 manuscript received 21 Mar 77

BABANOV, G. P., KURYGIN, G. V., BUROV, YU. A. and BABANOV, A. G., Haroslavl Medical Institute

[Abstract] This is a critical discussion of the article "General Biological Concepts of Adaptation, Compensation, and Acclimatization in Modern Toxicology" by I. M. Trakhtenberg and V. A. Tychinin (GIGIYENA I SANITARIYA, No 1, Jan 77 pp 69-72). While that article is considered an important

contribution and the terminology is agreed with, some exceptions are taken to the basic approaches to the estimation of biological changes in a body caused by weak chemical actions and resulting in some form of adaptation. The critics here disagree, first of all, with the statement that all body function and reaction, mobilized for the preservation of health, result from an ontogenetic evolution in the biological relation between the body and a given irritant. They, furthermore, object to a division of life activities into the two distinct categories of functions and reactions. Unlike the original authors, the critics here believe that compensation should be treated as a qualitatively different form of adaptation. The critics agree, however, that the concept of acclimatization to chemical factors contains a great deal of indeterminacy. They prefer to treat it, in the general biological sense, as a special case of adaptation where the resistance of the separate system (which a body is) to chemical action of the environment increases with time. It is not to be regarded as a special case of physiological adaptation, however, which is a different mode altogether. References 2, Russian.

USSR

UDC 575.591

LOWERING THE MUTAGENIC EFFECT OF THIOPHOSPHAMIDE BY THE ACTION OF AN OXYETHYLIDENDIPHOSPHONIC ACID DERIVATIVE

Moscow GENETIKA in Russian Vol 14 No 7 Jul 78 pp 1276-1277 manuscript received 14 Jun 77

VEL'TISHCHEV, YU. YE. and SELEZNEV, YU. V., Scientific Research Institute of Pediatrics and Infant Surgery, Ministry of Health RSFSR, Moscow

[Abstract] A study was made to determine the effect of potassium oxyethylidendiphosphonate and thiophosphamide simultaneously acting on human lymphocytes. Cultures of human lymphocytes from peripheral blood vessels had been grown for this experiment by the D. A. Hungerford method with slight modifications. The results indicate an appreciable lowering of the harmful-to-chromosomes-effect of thiophosphamide in the presence of this oxyethylidendiphosphonic acid derivative, the latter was also found to have no cytogenetic effect on such a culture. This antimutagenic action indicates, furthermore, a likely protective role, in the general biological sense, of natural phosphonic compounds in the cell membrane. References 8: 6 Russian, 2 Western.

USSR UDC 615.22:547.918:582.937-015.2:[616.127-005.8-092.6:616.127-06

EFFECTS OF STROPHANTHIN ON OXIDATIVE PROCESSES IN INFARCTED MYOCARDIUM

Kiev VRACHEBNOYE DELO in Russian No 7 1978 pp 38-41

FROL'KIS, R. A. and LIKHTENSHTEYN, I. YE., Biochemistry Laboratory, Ukrainian Scientific Research Institute of Cardiology imeni Academician N. D. Strazhesko, Kiev

[Abstract] Investigations were conducted on dogs with experimental myocardial infarctions to determine the effects of strophanthin (5  $\mu$ g/kg/day; 5 days) on oxidative processes within the infarcted zone and in uninfarcted regions. Strophanthin was found to be essentially without effect on aerobic metabolism; however, depressed levels of cytochrome oxidase in the uninfarcted region were increased to 59% of control value. The effects were more pronounced on anaerobic metabolism: in the uninfarcted region glycogen levels were increased from 405 to 516 mg% and phosphorylase activity was increased by 24%, while in the infarcted region glycogen levels were elevated from 305 to 375 mg%. Other effects of strophanthin administration included maintenance of high hepatic levels of glycogen and a high degree of oxygen levels in the blood. Although strophanthin does not favor increased oxygen consumption by the damaged myocardium per se, it does promote an increase in the synthesis of high energy compounds per each molecule of oxygen consumed. Figures 2; references 15, Russian.

Physiology

USSR

UDC 612.135-06:612.275.1

ARCHITECTONICS OF THE MICROCIRCULATORY BED AND VASOMOTOR REACTIONS OF THE MICROVESSELS DURING ADAPTATION TO HYPOXIA

Moscow PATOLOGICHESKAYA FIZIOLOGIYA I EKSPERIMENTAL'NAYA TERAPIYA in Russian No 3 May/Jun 78 pp 57-60 manuscript received 10 Nov 76

IBRAGIMOV, YU. I. and MIRZADAYEVA, L. A., Department of Normal Physiology of the Tadzhik Medical Institute, Dushanbe

[Abstract] This is a study of the features of structural organization and reactivity of the microcirculatory channel in rats, 120-150 g, adapted to chronic barochamber hypoxia and when those animals are subjected to acute hypoxia. The procedure for analysis of the changes, in blood microcirculation in the mesentery of warm-blooded animals, follows that used earlier (Smolichev, 1968). The apparatus employed a "Biolam-70" microscope. Vascular diameters were determined by serial photos of the microvessels with the MFN-11 microphoto adapter on "Mikrat'300" film. Barochamber simulation was at 6000 m, 18 hrs/day, for 2 weeks. In the adapted animals, a significant increase was recorded in the number of blood-carrying capillaries with a diameter of 4 to 7 mcm, and of lymphatic vessels with a diameter of 40 to 200 mcm; also recorded was an increase in blood flow and in activity of the lymph circulation. In response to acute hypoxic hypoxia a brief, insignificant, vasodilating effect upon the venous circulation and capillaries, and a mild constrictive reaction of the arterioles was seen. It appears that the reduced reactivity of the animals to the acute hypoxic hypoxia is attributable to the adaptation period. Figures 2; references 6: 5 Russian, 1 Western.

USSR

UDC 612.821.7+616.8-009.836

MEDICINE AND SLEEP

Moscow SOVETSKAYA MEDITSINA in Russian No 7 Jul 78 pp 117-122 manuscript received 27 Jan 78

VEYN, A. M., professor, and YAKHNO, N. N., candidate of medical sciences, Moscow

[Abstract] This report is an extended lecture review of present day research on sleep in relation to somatic diseases, and draws upon the experience of the authors, and, particularly, non-Soviet contributions. Soviet work includes that of Veyn, Yakhno and L. P. Latash who have described regulation of visceral functions of the body during the various phases of

sleep, especially respiratory functions; V. G. Shlapkene and V. A. Lesene have examined myocardial ischemia in the phase of rapid sleep. Veyn's contributions also concern study of the clinical aspects, pathogenesis and therapy of mental and neurological diseases and associated sleep disturbances. V. S. Rotenberg and V. V. Andrianov utilize sleep for differential diagnosis of functional and organic forms of sexual impotence. Research on sleep is credited with considerable advances in theoretical and clinical medicine, and it is suggested that therapy of the "sleeping state" will augment that of the usual "awake state". References 27: 8 Russian, 19 Western.

USSR

UDC 616.833.33/.34-008.6(047)

BRACHIUM-HAND SYNDROME (REFLEX DYSTROPHY OF THE UPPER EXTREMITY)

Moscow SOVETSKAYA MEDITSINA in Russian No 7 Jul 78 pp 122-125 manuscript received 26 Apr 77

ZASLAVSKIY, YE. S. and KOTENKO, V. V., Laboratory of Clinical Pathology of the Scientific Research Institute of Complex Problems of Hygiene and Occupational Diseases, Siberian Branch, Academy of Medical Sciences USSR; Department of Orthopedics, Traumatology and Military Field Surgery of the Novokuznetsk Institute for the Advanced Training of Physicians

[Abstract] This is a review. The brachium-hand syndrome (BHS), the pathogenesis of which is still somewhat obscure, is the cause of extended loss of work capacity. It was initially described in 1951 (Le Breton) but present day concepts of the problem, and its designation, stem from Steinbrocker (1960). This article recapitulates current knowledge on BHS. The characteristic clinical picture involves three stages of development: first, the acute stage, which lasts from 2 to 6 months, beginning with pain in the upper arm joints, involvement of the hand with pain and some loss of movement; Sudeck's syndrome of the head of the humerus and carpal bones is seen in X-ray photos; second, the dystrophic stage, involving pain, limited movement and some alleviation, changes in the skin, contracture of the fingers; punctate osteoporosis of the carpal bones appears in the X-ray pictures; this stage lasts 3 to 6 mos; third phase, a stage of final atrophy, involving the skin and tissue of the hand, and, radiologically, etched-glass-like diffuse osteoporosis of the humeral head, carpal and finger bones. This stage lasts 3 to 12 months. Spontaneously, or under treatment, the disease can be arrested at any stage. No generally-accepted theory of disease pathogenesis exists although a reflex neurovascular, neurodystrophic disturbance in the affected area is widely suspected. Other explanations are discussed; prevention is difficult because of the polyetiological nature of BHS, but prompt treatment of injury is essential. References 81: 22 Russian, 3 Bulgarian, 1 Hungarian (in Russian), 55 Western.

USSR

UDC 612.821

BIOELECTRIC PROPERTIES AND ULTRASTRUCTURE OF SMOOTH-MUSCLE VASCULAR CELLS  
IN TISSUE CULTURE

Leningrad FIZIOLOGICHESKIY ZHURNAL SSSR in Russian Vol 64 No 6 Jun 78  
pp 795-801 manuscript received 12 Apr 77

YEVDOKIMOV, I. R., BARCHENKO, L. I., FROL'KIS, I. V. and VESELOVSKIY, N. S.,  
Section of Physiology of the Blood Circulation and Section of Immunology  
and Cytotoxic Sera, of the Institute of Physiology imeni A. A. Bogomolets,  
Academy of Sciences UkrSSR, Kiev

[Abstract] The task of studying smooth-muscle cells of the blood vessels  
is difficult within the vessels themselves; however, cell tissue cultures  
can serve as a physiological model of the intact cells, especially in view  
of data indicating that the cells retain the properties of the intact tis-  
sues from which they were cultured. The present study deals with examina-  
tion of several properties of cultured smooth-muscle cells of blood-trans-  
porting vessels. Work was done on cultures prepared from the portal vein  
of adult rabbits. Growth of cells was monitored with B-513 A microscope  
from the Tesla firm. The cells displayed spontaneous electrical activity;  
some inactive cells could be stimulated to electrical activity by imposi-  
tion of a hyperpolarizing current. Membrane potential and initial resist-  
ance of the cells decreased with increasing osmolarity of the extracellular  
medium, and the cells decreased in volume. The culture cells were confirmed  
as smooth-muscle cells by electron-microscopic examination. Figures 5;  
references 17: 3 Russian, 14 Western.

USSR

UDC 612.172

SIGNIFICANCE OF THE "PROXIMITY EFFECT" IN RECORDING INTRACARDIAC ELECTROGRAMS

Leningrad FIZIOLOGICHESKIY ZHURNAL SSSR in Russian Vol 64 No 6 Jun 78 pp 777-  
784 manuscript received 28 Oct 77

RUGENYUS, YU. and KHAYET, R., Problem Scientific Research Laboratory of Heart  
and Vascular Surgery of the Medical Faculty; Department of Cardiology of the  
Faculty for the Advanced Training of Physicians, Vilnyus State University  
imeni V. Kapsukas

[Abstract] Preliminary studies (1976) by the Laboratory had shown that posi-  
tioning of an intracardiac unipolar electrode close to the main conducting  
tract of the heart decreases or liquidates the resistance between the elec-  
trode and that sector and a "proximity effect" occurs with pronounced

recording of spike potentials in the regions of the sinus node, atrium, bundle of His or its cruri. The present report attempts to clarify the proximity effect and the reason for the appearance of the spike potentials. Local electrograms were recorded, intracardially, in 73 dogs, 10 to 40 kg, of various ages and sex. Placing a 1 mm diameter unipolar electrode, as described, induced the proximity effect rapidly in a spike-formed spreading wave of excitation in the corresponding sector. Spike potentials of the sino-atrial node, atrium and bundle of His appeared markedly only in the presence of the proximity effect; in its absence rudimentary spikes or notches appeared. The moment of completion of the sinus impulse is recorded as a spike of this node 10 to 30 ms before the P wave in the EKG recorded from the body surface. Depolarization of the atrium appears as a slow A wave in the absence of the proximity effect and as three spikes superimposed on it in the presence of the effect. Figures 5; references 21: 7 Russian, 14 Western (one by Rugenius in German).

USSR

UDC 612.852

SIGNIFICANCE OF NONLINEAR DISTORTIONS IN THE INNER EAR FOR ACOUSTIC PERCEPTION OF SONIC AND ULTRASONIC STIMULI

Leningrad FIZIOLOGICHESKIY ZHURNAL SSSR in Russian Vol 64 No 6 Jun 78  
pp 737-740 manuscript received 20 Oct 77

SAGALOVICH, B. M. and MALINKIN, V. B., Laboratory of Physiology and Acoustics of the Moscow Scientific Research Ear, Nose and Throat Institute, Ministry of Health RSFSR

[Abstract] A widely-held view is that perception of tones with frequency over 10 to 15 kHz does not involve vibrations of definite parts of the basic membrane of the cochlea of the inner ear but rather the formation of harmonics of lower frequency; attention is again being given to this view in light of study and practical use of acoustic perception of ultrasounds. Some authors also accept the possibility of the appearance of acoustic sensitivity, under the action of ultrasound, due to formation in the inner ear of undertones of frequency of the audible range. This report concerns study of the appearance of non-linear distortions in the internal ear with bone-tissue conductance of acoustic signals. Comparison was made of the coefficient of nonlinear distortion of microphone potential of the cochlea of rabbits under air and bone conduction of sounds of the auditory spectrum and of ultrasounds conducted by bone. Chinchilla rabbits (21), 1300-1600 g, were used in the experiment. Procedure for drawing off potentials was described by the authors earlier (1974). The nonlinear distortions in the auditory frequency range for air and bone conductance were about equal. The magnitude of the nonlinear distortions of the potential in the ultrasonic

frequency range did not exceed the magnitude of the distortions obtained for sounds of the auditory range. The acoustic reactions to ultrasound are apparently not caused by formation of undertones, and are the immediate response of the cochlea to the corresponding stimulus. Figures 2; references 14: 6 Russian, 8 Western.

USSR

UDC 616.859.1-092

#### MAN'S SUSCEPTIBILITY TO MOTION-SICKNESS

Moscow VESTNIK OTORINOLARINGOLOGII in Russian No 4 Jul/Aug 78 pp 59-63  
manuscript received 24 Jun 77

SOLODOVNIK, F. A., candidate in medical sciences

[Abstract] The development of motion-sickness is analyzed here from the cause-effect standpoint, as it should be, but one cause alone is found not to provide an adequate explanation. On the basis of clinical and experimental data, various constitutional and acquired deficiencies of man's limbicohypothalamo-reticular complex are held responsible, without which known stimulation of afferent nerves and, especially, of the vestibular apparatus does not result in a clinical pattern. Man's susceptibility to this disease cannot yet be reliably enough predicted and effective prophylactic countermeasures have not yet been developed, which makes further research in this area very necessary. References 24 : 20 Russian, 4 Western.

USSR

UDC 612.766.1

#### GENERAL AND PARTICULAR ASPECTS OF THE ADAPTATION PROBLEM

Moscow FIZIOLOGIYA CHELOVEKA in Russian Vol 3 No 6 Nov/Dec 77 pp 985-996  
manuscript received 5 May 77

RYZHIKOV, G. V., Scientific Research Institute of Normal Physiology imeni P. K. Anokhin, USSR Academy of Medical Sciences, VAL'TSEV, V. B., Institute of Higher Nervous Activity and Neurophysiology, USSR Academy of Sciences, Moscow

[Abstract] The adaptation problem is discussed in terms of social theories and controversial ideologies as well as in the more proper biological and ecological sense. Both physiological and psychological factors and

processes characterizing various modes of adaptation are considered, including also the role of sense organs and nerves in the adaptation mechanisms. Adaptation is also treated from a more technical standpoint, namely as a problem in the theory of dynamic systems. References 49: 33 Russian, 1 Romanian, 15 Western.

USSR

UDC 612.216.2.014.462.8:616-003.96

ADAPTATION MECHANISMS ENSURING AN ADEQUATE SURFACE TENSION IN THE LUNGS

Moscow FIZIOLOGIYA CHELOVEKA in Russian Vol 3 No 6 Nov/Dec 77 pp 1006-1022  
manuscript received 10 May 77

ROMANOVA, L. K., ZHAVORONKOV, A. A., LEMPERT, B. L., POKROVSKAYA, M. S.  
and FILIPPENKO, L. N., Scientific Research Institute of Human Morphology,  
USSR Academy of Medical Sciences, Moscow

[Abstract] It has been definitively established that pulmonary alveoles are lined with a special histological complex responsible for the surface tension and preventing the collapse of lungs during exhalation. Electron-microscopic examination has revealed, furthermore, that this complex consists of a "ripe" surfactant separating the gaseous medium of an alveole from the liquid hypophase, an unripe surfactant, and a reserve surfactant. The entire structure and the composition of this pulmonary surfactant system, including the extracellular glycocalix, are described in terms of the latest available evidence. Of particular interest are the mechanisms by which surfactant is synthesized, excess surfactant is rejected, and deficient surfactant is replenished. The role of the pulmonary surfactant system in maintaining the normal permeability of the aerochemical barrier and in maintaining the optimum level of filtration pressure throughout the microcirculation system are also discussed. Its role is evident in the respective adaptation mechanisms such as regulation of the oxygen concentration, to which the presence of many COOH-groups contributes significantly. Figures 4; references 113: 28 Russian, 1 Czechoslovak, 1 Bulgarian, 83 Western.

USSR

UDC 612.273.1+612.286.4+612.434

EFFECTS OF HYPERBARIC OXYGENATION ON THE HYPOTHALAMO-HYPOPHYSIAL NEURO-SECRETORY SYSTEM

Kiev DOPOVIDI AKADEMIYI NAUK UKRAYINS'KOYI RSR in Ukrainian No 6 1978  
pp 544-547 manuscript received 28 Dec 77

GERZANYCH, I. I., Institute of Physiology, Academy of Sciences Ukrainian SSR, Kiev

[Abstract] Histochemical investigations were conducted on the hypothalamo-hypophysial system of male Wistar rats to determine the effects of hyperbaric oxygenation (3 atm. for 1 h). The results showed increased secretory activity in the paraventricular and supraoptic nuclei 1 h after exposure which persisted until the 6th hour; examinations 12 and 24 h later were comparable with unexposed control rats and indicated a return to basal neurosecretory level. Histochemical changes in the median eminence and the posterior portion of the neurohypophysis were also indicative of elevated neurosecretory activity due to hyperbaric oxygenation; however, the level of synthetic and secretory activity after 6 h was less pronounced than in the supraoptic and paraventricular nuclei, and after 12 h no excessive activity was evident. Figures 2; references 7, Russian.

USSR

UDC 612.53

THERMOGENESIS DURING COLD ACCLIMATIZATION

Kiev FIZIOLOGICHESKIY ZHURNAL in Russian No 4 1978 pp 493-499 manuscript received 9 Jun 77

SOBOLEV, V. I., Department of Human and Animal Physiology, Donetsk University

[Abstract] In order to elucidate the mechanism of thermogenesis during cold acclimatization, investigations were conducted on heat production by muscular contraction (tibial muscle) in the case of albino rats acclimatized to cold (-6 to +3°C for 45 days) in comparison with unacclimatized control rats. The results showed that heat production was 26.6% ( $P < 0.01$ ) to 114.6% ( $P < 0.01$ ) greater in the acclimatized rats--depending on the extent and nature of acclimatization--than in control animals. Evaluation of oxygen consumption data suggested that this was due to increased degree of dissociation between oxidation and phosphorylation. Confirmation for this hypothesis was provided by studies with 2,4-dinitrophenol (20 mg/kg, ip.) which did not potentiate thermogenesis in the acclimatized animals, but did increase thermogenesis due to muscular contraction in the control animals. Figures 5; references 16, Russian.

USSR

UDC 612.11/.12-014.4:612.014.481

EFFECTS OF ELECTRO- AND ACUPUNCTURE ON PERIPHERAL LEUKOCYTE COUNTS AND METABOLISM

Kiev VRACHEBNOYE DELO in Russian No 7, 1978 pp 59-62

SPRIDONYUK, V. P. and KOVARDAKOV, V. M., Tikhookeanskiy Village, Primorskiy Kray

[Abstract] Studies were conducted on the effects of electroacupuncture (EA) and acupuncture--employing gold (GA), silver (SA), or steel (StA) needles--on peripheral leukocyte counts and leukocyte metabolism in the case of 32 clinically healthy subjects (I), 35 neurasthenics (II), and 33 subjects in remission from gastritis or gastroduodenitis (III). Analysis of the results demonstrated that generally SA and StA promoted an increase in leukocyte counts while GA tended to depress them. Cytochemical studies showed that SA promoted an increase in peroxidase activity in groups I and III, and was without effect in group II, while GA resulted in increased leukocytic peroxidase activity in all 3 groups; StA and EA were without effect in terms of peroxidase activity. Both SA and GA led to an increase in leukocytic lipid content in groups I and II and depression in group III; StA resulted in increased lipid concentration in groups II and III and EA resulted in depression of the lipid content in groups II and III. Determinations of DNA levels showed that SA promoted an increase in groups II and III, GA led to a decrease in groups II and III, while StA and EA were without effect. Glycogen levels were unaffected by EA, were increased by StA in groups II and III and depressed in group I, and were uniformly increased by GA and SA in all groups of patients. On balance GA and SA were found to elicit the most profound changes, particularly when applied to the Tsu San Li point. No references.

USSR

UDC 612.013.7.014.45

CHANGES IN ENERGY EXCHANGE IN THE TISSUES OF ANIMALS SUBJECTED TO CONSTANT AND INTERRUPTED LOW-FREQUENCY VIBRATIONS

Moscow BYULETEN' EKSPERIMENTAL'NOY BIOLOGII I MEDITSINY in Russian No 7, Jul 78 pp 35-38 manuscript received 17 Oct 77

MEN'SHOV, A. A. and BARANOVA, N. P., Kiev Institute of Labor Hygiene and Occupational Diseases

[Abstract] A study is made of the adenine nucleotides in the nervous and muscular system of animals subject to the effects of constant and

interrupted low-frequency vibration, in order to determine the influence of this vibration on energetic processes involving the nucleotides. The experiments were performed on male rats weighing 180-220 g and involved constant vibration in the 2 Hz octave band at 130 dB. The vibration was either constant, or: a) 30 minutes on and 15 minutes off, b) 30 minutes on and 8 minutes off, or c) 30 minutes on and 4 minutes off. The results indicate that the changes in the energy metabolism in the brain and muscles of rats under the influence of interrupted vibration depend on the length of the pauses, shorter pauses being more favorable than longer pauses. Overall, the experiments caused a significant decrease in ATP content and total adenine nucleotides in the muscles of the experimental animals. Figures 3; references 13: 10 Russian, 3 Western.

Plant Biochemistry

USSR

UDC 633.1+632.51+632.954

RESISTANCE OF VARIETIES OF CULTIVATED GRAINS AND WILD OATS TO WILD-CONTROL HERBICIDES

Moscow VESTNIK SEL'SKOKHOZYAYSTVENNOY NAUKI in Russian No 3 Mar 78 pp 30-37

PETUNOVA, A. A., candidate of biological sciences, All-Union Scientific Research Institute of Plant Protection and TROFIMOVSAYA, A. YA., doctor of agricultural sciences, All-Union Order of Lenin and Order of Peoples' Friendship Scientific Research Institute of Plant Growing imeni I. I. Vavilov (VIR)

[Abstract] Wild oats (*Avena fatua* L.) is a persistent weed among grains in the Ukraine, Kazak SSR, Siberia and the Volga valley. Karbin (4-chloro-2-butinyl-N-(3-chlorophenyl)-carbamate) has been used to control it, but has only a brief (7-day) period of efficacy. The two institutes, cited above, have been studying barley and wheat resistance to karbin and report data of studies in 1969-1971. Good resistance was shown by varieties Omskiy 13709 (USSR) and Cambrinus (Holland); Viner and Yuzhniy were less resistant. Dosage of karbin must be calculated on basis of that herbicide's potential for grain damage. Another substance, triallat (S-2,2,3-trichloroallyl-N, N-diisopropylthiocarbamate) is used against wild oats in wheat and barley fields. Its action varies from place to place of use in the USSR as did karbin also. In 1969-1972 a third agent was tested, viz., bidizin [3(4-chlorophenyl)-2-chloro-o-methylpropionate]; it was effective against wild oats but not more than karbin. Another herbicide, suffiks [ethyl-N-benzoyl-N-(3,4-dichlorophenyl)-2-aminopropionate], was also effective against wild oats; in 1976 it was recommended for use in the USSR. Grains showed some variation in resistance in different years. Figure 4; no references.

USSR

UDC 631.527+631.5

FOR EACH VARIETY AND HYBRID A SPECIFIC TECHNOLOGY!

Moscow VESTNIK SEL'SKOKHOZYAYSTVENNOY NAUKI in Russian No 3 Mar 78 pp 15-29

FEDIN, M. A., doctor of agricultural sciences, chairman of the State Commission for Search for Varieties of Agricultural Plants

[Abstract] The importance of stable varieties and hybrids for levels of production needed in the Party programs to enhance the agricultural segment of the economy is stressed. The author has been working, together with personnel of the Heterosis Laboratory of the All-Union Scientific Research

Institute of Plant Growing, on genetic aspects of development of productive varieties. In this article reference is made to work at various geographic sites in the USSR (e.g., Voroshilovgrad Oblast, Krasnodar Kray, Kirovograd Oblast, Buryat ASSR) with differing climates and soil conditions. Varying results depending on variety used, geographic location, timing of planting and harvests, fertilization or non-fertilization, point up the need for application of optimal combinations of variety and agrotechnology. No references.

USSR

UDC 633.11+581.2

RESPIRATORY ACTIVITY OF ORGANS OF WINTER WHEAT PLANTS UNDER FIELD CONDITIONS

Moscow VESTNIK SEL'SKOKHOZYAYSTVENNOY NAUKI in Russian No 3 Mar 78 pp 6-14

SHATILOV, I. S., academician VASKhNIL (All-Union Academy of Agricultural Sciences imeni Lenin) and SHAROV, A. F.

[Abstract] Data are available on the effect of the environment on the respiratory activity of plant tissues; these data have been collected under laboratory conditions, whereas no data have been collected under field conditions. This is a report of studies 1974-1976 at the field-station, crop-rotation, teaching and experimental farm "Mikhailovskoye" (of the Timiryazev Agricultural Academy) in Podolskiy Rayon of Moscow Oblast. Two conditions were used: with and without fertilizations. Mironovskaya 808 was the wheat tested. Air and plant temperatures were measured with an automatic RTR (plant temperature recorder) model AFI; photosynthetically-active radiation in the soil was measured with a Kozyrev phytopyranometer and KSP-4 potentiometer. Intensity of gas-exchange (based on  $\text{CO}_2$ ), in an assimilation chamber, was measured with mobile automatic devices, employing optic-acoustic, infrared gas analyzer GIP-10 MBZ (Soviet-made). Intensity of respiration increased, with a  $10^\circ$  increase in temperature, by  $1.0 \text{ mg CO}_2/\text{dm}^2/\text{hr}$ . The daily course of dark and night respiration followed the temperature curve. Maximum output of  $\text{CO}_2$  occurred when letting out of shoots was completed and ear formation began. Respiration was more intense in young organs. It was more intense in fertilized plants under a low watering regimen; in adequate watering, the non-fertilized wheat showed more intense respiration, but, with more intense growth, in the period of ear-formation and blooming, respiration was more intense in the fertilized plants. Tabulation is presented of respiration of various organs of the wheat, changes in the ratio of respiration-photosynthesis for 1974-75 and 1975-76, and the dynamics of  $\text{CO}_2$  gas exchange during eight phases in growth (sprouting, autumn tillering, spring tillering, beginning and end, of exit into the tube, ear formation, blooming and milky ripeness). References 12, Russian.

USSR

UDC 58.075

ACTION OF LASER RADIATION ON PLANTS

Moscow VESTNIK SEL'SKOKHOZYAYSTVENNOY NAUKI in Russian No 3 Mar 78 pp 50-53

SAVIN, V. N. and ARKHIPOV, M. V., candidates of biological sciences, Agro-physical Scientific Research Institute (AFI)

[Abstract]2 This work is an attempt to distinguish direct and indirect effects of a laser beam (337 nm) on three-day-shoots of barley. The apparatus was designed to provide laser micro-beams of various diameters; in this experiment diameter was 400 mu, time of irradiation, 4,8 and 16 min. The technique permitted visually-controlled radiation of the top of the coleoptile, without touching the root cells. Changes in length of coleoptile and root were recorded on the second and sixth day after radiation. Indirect action of the laser radiation is seen in the delay of growth of the root and inhibition of growth of the coleoptile on the sixth day after irradiation. The procedure may be useful in genetic engineering for control of mutation. Figure 1; references 7, Russian.

USSR

UDC 575.24:633.11

PROBLEMS IN THE USE OF IRRADIATED POLLEN FOR GENETICS AND SELECTION OF SOFT WINTER WHEAT (TRITICUM AESTIVUM)

Moscow GENETIKA in Russian Vol 14 No 7 Jul 78 pp 1237-1246 manuscript received 11 Mar 77; after revision, 29 Nov 77

BOVKIS, YE. N., Scientific Research Institute of Agriculture in the Central Regions of the Non-Chernozem Zone, Moscow Oblast

[Abstract] In lengthy experiments (1967-1976) at the Institute of General Genetics, for the genetic selection of precious high-yield shoft-stalk soft winter wheat, pollen of three wheat varieties (Triticum+agropyron hybrids 186 and 599, and Mironovskaya 808) was exposed to gamma radiation from a Co-60 source. The reaction of the first four plant generations produced from self-pollinated seeds was gauged by the size and the weight of spikes and seeds as well as by their fertility and viability. Critical radiation doses, in terms of weight reduction and survival, were established on the basis of selection, mutation, and cross-mutation experiments and analysis of their results. Figures 1; references 11: 7 Russian, 1 German, 3 Western.

USSR

UDC 575.24:633.16

ISOLATION OF A SPONTANEOUS BARE-GRAIN BARLEY VARIETY

Moscow GENETIKA in Russian Vol 14 No 7 Jul 78 pp 1281-1283 manuscript  
received 18 Jul 77

VALIEV, R. R. and KOSHELEVA, O. M., Chair of Genetics and Selection,  
Leningrad State University imeni A. A. Zhdanov

[Abstract] A bare-grain spontaneous mutation form of barley has been isolated, the seeds descending from liguleless barley of a U.S. 1961-62 genetic collection with six rows of husked grains and a straight awn, subsequently grown in quarantine at the All-Union Scientific Research Institute of Plant Cultivation imeni N. I. Vavilov. The unique combination of features, namely a double-row spike and a ternate awn, as well as the controlled conditions of the experiment preclude any possibility that this variety could have been formed by mechanical contamination of the original strain. Further study of this new form is recommended. Figures 1; references 9: 8 Russian, 1 Western.

Plant Pathology

USSR

UDC 633.63+631.467

INFLUENCE OF CROP ROTATION ON SUSCEPTIBILITY OF SUGAR BEETS TO PARASITIC NEMATODES

Moscow VESTNIK SEL'SKOKHOZYAYSTVENNOY NAUKI in Russian No 3 Mar 78 pp 39-42

ZUBENKO, V. F., doctor of agricultural sciences and SIGAREVA, D. D., candidate of biological sciences, All-Union Scientific Research Sugar Beet Institute (VNIS)

[Abstract] Despite development of chemical protectants and of resistant sugar beet varieties, crop rotation remains the best practical means to cut down harvest losses to parasitic nematodes. The beet nematode is a problem in the Ukraine, the Baltic states, White Russia, Kazakhstan, TadzhSSR, KirSSR, Kaliningrad Oblast, Leningrad O., Pskov O., Novgorod O., Belgorod O., Krasnodar Kray and the Caucasus. Methods of control used in foreign lands (GDR, FRG, Poland, Denmark, Holland, CSSR, USA) are cited, crop rotation and alternation being seen as helpful. Potential benefits for the USSR of crop rotation techniques are discussed. References 10: 2 Russian, 8 Western.

USSR

UDC 575.126:633.11:582.285.2

GENETIC CHARACTERISTICS OF THE RESISTANCE OF WHEAT VARIETIES TO YELLOW MILDEW

Moscow NAUCHNYYE DOKLADY VYSSHEY SHKOLY, BIOLOGICHESKIYE NAUKI in Russian, No 6 Jun 78 pp 108-110 manuscript received 2 Jun 77

ANPILOGOVA, L. K.

[Abstract] Genes responsible for the resistance of 13 varieties of summer wheat and winter wheat, as well as of some of their hybrids, to yellow mildew (*Puccinia striiformis* West f.sp. *tritici* Erikss. et Henn.) stimulant have been isolated and identified by analysis of  $F_2$  hybrids. The results of data evaluation indicate that the resistance of this selection of wheat varieties is controlled by new genes, which have been tentatively designated as *YrN* (new dominant) and *yrN* (new recessive), respectively, or as *yrN?* where in doubt. The effectiveness of these genes was also determined, from the condition of adult plants grown in quarantine from homozygotic seedlings with individual resistance genes or their combinations and then, during earing, infected with particular mildew biotypes to which the sprouts had been resistant. References 9: 7 Russian, 1 Czechoslovak, 1 Western.

Physiological Psychology

USSR

INTERRELATION BETWEEN PSYCHOLOGY AND PHYSIOLOGY IN PERCEPTION STUDIES

Moscow FIZIOLOGIYA CHELOVEKA in Russian Vol 3 No 6 Nov/Dec 77 pp 951-960  
manuscript received 10 Apr 77

LOMOV, B. F., Institute of Psychology, Academy of Sciences USSR and  
IVANITSKIY, A. M., Institute of Forensic Psychiatry imeni Serbskiy, Moscow

[Abstract] In order to establish how psychological and physiological factors interact in converting the energy of external stimuli to perception through sensing organs in the brain, an experimental study was made dealing specifically with visual (32 persons tested) and somatosensitive (10 persons tested) stimuli. The experiment consisted of three test series, with 100 or 128 different stimuli applied in each. The object of the neutral first test series was to determine, as precisely as possible, which of two pairs of stimuli had been detected. In the next two test series additional motivation was given for a preferential detection of the difference between stimuli or, conversely, preferential detection of the identicity of stimuli. The signal level in all tests was  $50\pm25\%$ , with a false-alarm level of  $25\pm15\%$ . A statistical correlation analysis of the results reveals three stages in the sensation-perception process. During the first stage, tentatively through the first 0-100 ms after stimulation, the physical characteristics of the stimulus are mapped in the brain structure. During the second stage, 100-200 ms after stimulation, information coming from the senses is compared with information already stored in the brain. This is the crucial stage in any mechanism of perception, recognition, and subjective image formation. The third stage, 200-300 ms after stimulation, involves decision making and preparation for the response. L. V. Matveyeva and V. B. Strelets participated in this experiment. Figures 2; references 29: 18 Russian, 1 Czechoslovak, 1 Hungarian (?), 1 German, 8 Western.

Psychiatry

USSR

UDC 616.891.2-036.1

SOME FEATURES OF MARGINAL AND NUCLEAR PSYCHOPATHIES (FROM THE COMPARATIVE AGE ASPECT)

Moscow SOVETSKAYA MEDITSINA in Russian No 7 Jul 78 pp 38-42 manuscript received 29 Dec 76

LAKOSINA, N. D., Department of Psychiatry of the Second Moscow Medical Institute imeni N. I. Pirogov

[Abstract] This is a report of formation of hysterical psychopathies in 75 patients. Based on criteria of O. V. Kerbikov and N. I. Felinskaya, the patients were divided into two groups, the first (27) categorized as congenital (nuclear) and the second (48) as acquired (marginal). Signs of psychopathy were noted in the first group before the age of 20; patients in this group are described from their early years, school period, sub-adolescence, adolescence, midyears and climacteric, and typical features are detailed. Patients in the second group first manifested the disease, as a rule, in their thirties, in response to an external traumatic situation. This differs from the first group where common, everyday situations are involved. The intent of the categorization, through differential diagnosis, is to provide guidelines in selection of therapeutic drugs and initiation of psychotherapy. References 5, Russian.

USSR

UDC 616.891-08

SOME PRINCIPLES FOR TREATMENT OF NEUROSIS-LIKE AND PSYCHOPATHIC-LIKE CONDITIONS

Moscow SOVETSKAYA MEDITSINA in Russian No 7 Jul 78 pp 42-45 manuscript received 20 Sep 77

GRABOVSKIY, YA. A., Kamenets-Podolsk City Hospital imeni V. I. Lenin

[Abstract] An increase has been noted, among medical patients, in borderline forms of neuropsychic pathologies; 30 to 50% of patients requesting general medical care exhibit some functional disturbance of the nervous system. This article reports ambulatory care of 323 patients who were found to have neurosis- and psychopathic-like states which developed largely in connection with somatic complaints. Three groups were distinguished: i) patients with organic damage to the central nervous system (211), viz., closed skull-brain injuries (67), neural infections (94), vascular disease of the brain (34) and chronic CNS intoxication (16); ii) endocrinopathies (30) and iii) diseases of the internal organs (82). Treatment consisted of

direct attention to the somatic disease, differentiated therapy of the mental and vegetative-endocrinological disturbance, with reference to any focal brain damage, removal of the psychogenic influences of the disorder, counseling and work guidance, evaluation of working capacity and temporary relief from work responsibility. Results of therapy (lasting improvement, improvement or failure) for the three groups are tabulated. Patients with post-injury mental disturbances responded best to therapy, those with post-neuroinfection disorders were helped the least. Successful therapy of mental disturbances associated with physical complaints will require consultative assistance from various specialists, among whom the psychiatrist will be indispensable. References 6: 4 Russian, 2 Western.

USSR

UDC 616.742.7-009.12-008.6:616.895.8

CLINICAL ASPECTS AND COURSE OF THE KUHLENKAMPFF-TARNOW SYNDROME IN NEUROLEPTIC THERAPY OF SCHIZOPHRENIA PATIENTS

Kiev VRACHEBNOYE DELO in Russian No 6 Jun 78 pp 113-114

ZOLOTNITSKIY, R. I., candidate of medical sciences and ZHUKOV, V. M., Department of Psychiatry of the Kiev Medical Institute; City Psychoneurological Hospital No 18

[Abstract] This is a report of observations since 1958 on 56 patients, all male, ages 19 to 56, suffering from schizophrenia with convulsive complications of the Kuhlenkampff-Tarnow type occurring during treatment with neuroleptics. The complication induced was monotypic and did not correlate with the neuroleptic used. Three courses were seen: i) non-stable (22)--wherein in the appearance of convulsions could be prevented by intervals in treatment, decreased dosage, substitution, and milder neuroleptics. These patients evidenced the complication at later stages of their treatment or after use of a stronger agent; ii) stable (27)--the previous methods did not prevent the convulsions, and neuroleptics had to be discontinued. These patients displayed the convulsions early on in the therapy; 20 had sustained traumatic or infectious disease damage in the past, or allergic reactions; iii) spontaneous (7)--wherein, after change in neuroleptics and in the course of a few years, the convulsions appeared episodically. The syndrome is thought to involve an allergic state, and care is indicated in selection of neuroleptics in treatment of patients. References 2, Russian.

USSR

UDC 616.895.8-036.865

TEMPORARY INCAPACITY OF PATIENTS WITH PAROXYSMAL SCHIZOPHRENIA

Minsk ZDRAVOOKHRANYENIYE BELORUSSII in Russian No 7 Jul 78 pp 37-39 manuscript received 29 Aug 77

KLIMOVICH, A. S., candidate of medical sciences, Minsk

[Abstract] A discussion is presented on the various types of periodic or paroxysmal schizophrenia, and the varying degrees of justification for excusing patients with these various forms of schizophrenia from work. It is pointed out that many patients with periodic or paroxysmal schizophrenia experience long periods of remission, during which time they are quite capable of working in their occupation. Favorable and unfavorable prognostic signs are given for periodic schizophrenia. In general, patients who suffer sudden, severe attacks of psychosis, manifested as structurally simple acute states which pass relatively quickly (within 4 months), while manifesting activity and the capability of critically evaluating their own status, are reasonable risks for continued labor activity. References 2, Russian.

Public Health

BULGARIA

STUDY OF THE PHARMACY COMPOUNDER'S WORK TIME BUDGET

Sofia FARMATSIYA in Bulgarian Vol 28 No 1 1978 pp 27-29 manuscript received Aug 77

CHAVDAROVA, V., MILEV, M., SOMLEVA, A. and ZAPRYANOVA, KR., Medical Academy, Pharmaceutical Faculty, Chair of the Organization and Economics of Pharmacy (head: Docent M. Milev)

[Abstract] The authors undertook to study the existing organization of the compounder's labor in public pharmacies, establish work time losses and discover reserves for raising the productivity of his labor. The photographic time-and-motion study method was used to study the work time budget for three days of the compounders on every work shift of 52 pharmacies in Bulgaria. Use was also made of data from observations conducted by Scientific-Organization-of Labor groups in okrug pharmacy enterprises. Findings are tabulated.

BULGARIA

STUDY OF THE SOCIOPSYCHOLOGICAL CLIMATE IN PHARMACY COLLECTIVES

Sofia FARMATSIYA in Bulgarian Vol 28 No 1 1978 pp 29-34 manuscript received Aug 77

ZAPRYANOVA, KR., SOMLEVA, A. and VURBENOVA, KR., Medical Academy, Pharmaceutical Faculty, Chair of the Organization and Economics of Pharmacy (head: Docent M. Milev)

[Abstract] The purpose of the study was to establish the type of prevailing interrelations and the factors influencing them, as well as the opinion of pharmacy workers regarding the style, method of operation and qualities which their immediate supervisor should possess. An anonymous questionnaire was used containing 29 questions about the interrelations in the collective, the pharmacy workers' opinion of their immediate supervisor, a rating of the sanitary and hygienic conditions in the pharmacy, and questions of a social character. The investigation was conducted in five okrugs selected by the lottery method (Veliko Turnovo, Varna, Blagoevgrad, Kurdzhali and Plovdiv), as well as the city of Sofia. The results indicate a favorable sociopsychological climate in the investigated pharmacy collectives. Immediate pharmacy supervisors have authority and enjoy the trust of their collectives. There are shortcomings of a hygienic and esthetic character creating a poor working microclimate. Suggestions are given for optimizing the sociopsychological climate of pharmacy collectives. References 7: 6 Bulgarian, 1 Russian.

USSR

UDC 614.27.003.121

DEVELOPMENT OF OPTIMUM NORMS FOR EXPENDITURES OF MATERIEL COMMODITIES FOR BUSINESS MAINTENANCE NEEDS

Moscow FARMATSIYA in Russian No 4 Jul/Aug 78 pp 48-49 manuscript received 2 Aug 77

ZOTOVA, M. I., SANDZHIYEVA, V. B. and TSYMBAC, N. YA., Tomsk Medical Institute; Tomsk Pharmacy Administration

[Abstract] The 25th Congress of the CPSU stressed that a rise in efficiency of socialist production requires improvement in the system for standardization and accounting for disbursement of raw materials and fuels, intensification of control over the use of material resources and combat against waste and lack of economy. Maintenance of sanitary hygienic conditions in the work of pharmacies requires disbursement of soap, soda, detergents, chloramine, hydrogen peroxide and the like, the expense for which varies with the costs for the particular pharmacy. No quotas are set as yet by the state for these so-called housekeeping needs, and cost figures are derived empirically. A recording is attempted for expenditures based on 1000 medicines (individually prepared, prepared in the pharmacy, and pharmacy packaged), on unit employee, and on 100 M<sup>2</sup> used space. Ranges of costs per these bases are developed mathematically, and are felt to be useful for the Pharmacy Administration to control or manage expenditures. References 3, Russian.

USSR

UDC 614.27:658.787.6:681.3

EXECUTION OF PLANNED STOCKTAKING USING INVENTORY CARDS AND COMPUTERS

Moscow FARMATSIYA in Russian No 4 Jul/Aug 78 pp 45-47 manuscript received 21 Apr 77

APAZOV, A. D., SADOVNIKOVA, R. V. and IZMAYLOV, V. I., Pharmacy Administration of the Sverdlovsk Oblast Executive Committee

[Abstract] A procedure for inventory of pharmacy goods, employing an inventory card file, has been developed, using as example that developed in the GDR pharmacy service. It has been found to lower the inventory time (for a category II pharmacy) from 4-1/2 working days to 1-1/2 days. The procedure was tested experimentally at one pharmacy from 1975 and 10 pharmacies (in Sverdlovsk) from 1 Jan 1977. Cards are prepared on each item and entries on the card describe the stock item (e.g., name, purpose) where it is located

(stockroom, institution, department), price (wholesale, retail), supply status (overage, shortage--based on Plan). Card data processing is by computer at a computer center. Time studies indicate that the experimental inventory procedure is highly effective. No references.

USSR

UDC 575.591

GENETIC STUDIES ON THE POPULATION OF UZBEKISTAN. IV. MEDICAL GENETICS OF THE POPULATIONS OF FOUR KISHLAKS IN THE URGUT RAYON OF THE SAMARKAND OBLAST

Moscow GENETIKA in Russian No 6 1978 pp 1093-1100 manuscript received 8 Feb 77

AKHMINA, N. I., REVAZOV, A. A., GINTER, YE. K. and SERGEYEV, A. S., Institute of Medical Genetics, Academy of Medical Sciences USSR, Moscow

[Abstract] An evaluation was made of hereditary morbidities in the populations of 4 kishlaks (villages) in the Urgut rayon of the Samarkand oblast in the Uzbek SSR. Examination of 848 individuals of both sexes ranging in age from 7 to 16 years revealed a relatively low incidence of cardiovascular diseases (5.78% vs. 8.45% for USSR as a whole), high palate (28.1%), Rokhlin's symptom (22.6%), dental diastema (12.2%), and a rather high incidence of toe anomalies (8.5%). Further calculations have shown that the genetic burden of adverse recessive genes is ca. 0.166 per subject. References 13: 2 Western, 11 Russian.

USSR

UDC 613.32:628.162.5]-074

DETERMINATION OF RESIDUAL AMOUNTS OF GRADE VA-2 FLOCCULANT IN DRINKING WATER

Moscow GIGIYENA I SANITARIYA in Russian No 7 Jul 78 pp 112-113 manuscript received 21 Oct 77

KHRISTIANOVA, L. A., candidate in chemical sciences, UDAL'TSOVA, N. I., candidate in chemical sciences and SOLDATOVA, S. S., Scientific Research Institute of Communal Water Supply and Purification, Academy of Communal Management imeni K. D. Pamfilov, Moscow

[Abstract] The cationic polyelectrolyte VA-2 (poly-4-vinyl-N-benzene-tri-methyl-ammonium chloride) has been recommended as a flocculant for water purification. Its interaction with the purple dye bromocresol does not

sensitively enough indicate its residual amounts in drinking water and, therefore, the acidic dye eosine-H is proposed for this purpose. A quantitative determination can be made, after the water has been cleared of excessive turbidity and coloration as well as of organic compounds of quaternary ammonium by means of filters and a centrifuge. The sensitivity of this method is 0.1 mg/liter VA-2, with a relative error of  $\pm 10-15\%$  over the 0.15-4 mg/liter range of residue. It is possible to test 10 specimens within 30-40 min, but they must be tested on the day of sampling. The method has been approved by the Ministry of Health USSR. References 1, Russian.

## Publications

USSR

UDC 614.876:622.349.5(049.3)

### RADIATION SAFETY DURING PROSPECTING AND MINING OF URANIUM ORES

Moscow GIGIYENA I SANITARIYA in Russian No 7 Jul 78 p 119

[Review of book "Radiatsionnaya Bezopasnost' pri Razvedke i Dobyche Uralnovykh Rud" by L. D. Saltykov, I. L. Shalayev, Yu. A. Lebedev, and L. V. Gorbushina, Moscow, Atomizdat, 1977, 208 pp]

MOISEYEV, A. A., candidate of technical sciences, [Reviewer]

[Abstract] The monograph begins with a discussion of all factors contributing to radiation hazards in uranium mines. The characteristics of and the problems with the major radiation hazard, namely radon and its short-life daughter products, are not treated here thoroughly enough. Standardization of safety requirements is treated rather in depth. It must be noted, however, that changes have been made in the earlier NRB-69 Radiation Safety Standard (now NRB-76) since publication of the book. The most important feature of the chapter dealing with radiation measuring methods and apparatus is the description of all most modern ones used in the USSR. Nothing is said, however, about those used in other countries and no mention is made about such biophysical methods based on the Pb<sup>210</sup> content in biomedia of mining personnel. Another important contribution of this book are the few chapters with a practical guide to organization and performance of radiation measurements as well as to the design of proper mine ventilation. On the other hand, neither the general mining engineering aspects of safety assurance nor special countermeasures for protection in uranium mines, especially open pits, and uranium transport carriers are treated thoroughly enough. On the whole, the book is definitely up to date and should be very useful to mining engineers and hygienists in the uranium industry as well as in associated, and in other than uranium mining, industries.

Radiobiology

USSR

UDC 575.24:582.263

GENETIC EFFECTS ON POPULATIONS BY RADIOACTIVE FISSION PRODUCTS OF U-235.  
REPORT 3: COMPARATIVE STUDY OF CHRONIC EFFECTS OF RADIONUCLIDES AND OF  
CHEMICAL MUTAGENS ON CHLORELLA POPULATIONS

Moscow GENETIKA in Russian Vol 14 No 7 Jul 78 pp 1221-1230 manuscript re-  
ceived 30 Jun 77

SHEVCHENKO, V. A., YATSKEVICHYUTE, A. Z. and RUBANOVICH, A. V., Institute of  
General Genetics, Academy of Sciences USSR, Moscow

[Abstract] Lengthy experiments were made to determine the chronic effects of beta-particles produced by fission of U-235, Pm-147, and a balanced Sr-90:Y-90 mixture on populations of the *Chlorella vulgaris* strain grown exponentially in a Tamia medium. The results are compared with the effect of the chemical mutagen ethylene imine. An analysis of the mutation process dynamics indicates that beta-particles produce the same large number of mutations at a much higher lethal level than does ethylene imine. A peak number of visible mutants, i.e., a maximum fraction of mutant cells and a minimum fraction of viable cells was in evidence during the initial stage of the experiment in both cases. This peaking could be due to an interplay of several factors such as a phenotypical lag, activation of reparative processes, and inhibition of culture growth. No reliable increase in the resistance to these factors has been noted after chronic exposure to either beta-particles for over 170 density doubling cycles or ethylene imine for about 110 density doubling cycles. The same model can be used for mathematically predicting the steady-state mutant and viable levels from data of acute exposure experiments. Figures 6; references 22: 18 Russian, 4 Western.

Therapy

CZECHOSLOVAKIA

UDC 616-071.1+71:621.335:616-082.4[ :362.11]

RECORDING OF MEDICAL DATA BY ALGORITHMS AT THE CENTRAL ADMISSIONS DEPARTMENT OF THE BRATISLAVA HOSPITAL

Bratislava BRATISLAVSKE LEKARSKE LISTY in Slovak Vol 69 No 5 May 78 pp 519-527 manuscript received 20 Jul 77

SCHEIDOVA, L., JAKES, H., SEC, M., TKACIK, J. and SYKORA, M., Research Institute for Medical Bionics, Bratislava

[Abstract] The authors developed a method of recording of medical data which can be used for feeding back information to the physician who is recording medical data concerning a patient whom he is treating. The method is based on the MUMPS -11 programming language developed at the Massachusetts General Hospital. The computer used was the PDP - 11/50 unit produced by the Digital Equipment Corporation of Maynard, Massachusetts; a VT 05 terminal with a picture screen and an alphanumeric board, and an LA 36 terminal for showing the generated texts on a screen were attached to the computer. Both were produced by the Maynard company. The authors prepared a system of instructions for accurate recording of the algorithms of the medical findings and for the use of the MUMPS language. When the physician records the symptoms of the treated patient properly the terminal screen shows what the next questions asked by the physician should be. Proper recording of the answers brings out further questions, which when properly answered and recorded lead ultimately to the correct diagnosis of the disease. A case of a patient's examination, with printouts of the questions and answers is discussed. Figures 2, references 6: 4 Czech, 2 Western.

## EAST GERMANY

### GENERAL NOTES ON THE PRESENT SITUATION CONCERNING THE RISK OF AIRBORNE INFECTION IN INTENSIVE THERAPY STATIONS

East Berlin DAS DEUTSCHE GESUNDHEITSWESEN in German Vol 33 No 24 1978  
pp 1127-1131 manuscript received 25 Feb 78

OPITZ, B., senior physician, Dr of medical sciences and SCHAU, G., graduate biologist, Institute of General Hygiene (Director: Horn, H., medical counsellor, professor, Dr of sciences); and MENZEL, K., docent, Dr of medical sciences and LINKE, M., MD, Clinic of Pediatric Medicine (director: PATZER, H., senior medical counsellor, professor, Dr of medical sciences), Medical Academy, Erfurt

[Abstract] High germ counts were found in air humidification and oxygenation equipment installed in a pediatric intensive-care station. The germs identified included fungi, *Pseudomonas aeruginosa*, gram-negative rodlets, *Klebsiella*, *Escherichia coli*, *Diplococcus mucosus*, and the like. The count ranged from  $4.1 \cdot 10^3/\text{ml}$  to  $2.22 \cdot 10^6/\text{ml}$ . Germs were also found in the supply water, even the distilled water used in the humidification system. Tests were carried out on model systems to evaluate the infection hazard resulting from this state of affairs. The results indicated that the hazard was significant and in no way corresponding to the advantages of humidification. The aerosol droplets were so small that they could readily penetrate the alveolae. It was recommended that the humidification and oxygenation equipment be sterilized regularly if needed at all, at least once a day. Water must not be allowed to stagnate in the system, and the supply water must be sterile. Whenever feasible, steam-vaporization should be installed.

Figures 4; references 5: 1 German, 4 Western.

## HUNGARY

### STUDY OF THE ACD-ADENINE-GUANOSINE BLOOD STABILIZER AND ITS UTILIZATION

Budapest ACTA PHARMACEUTICA HUNGARICA in Hungarian Vol 48 No 4 Jul 78  
pp 145-150 manuscript received 16 Aug 77

MEZEY, G., GAL, G., SZIGETI, J., KISS, E., Medical University of Szeged, Pharmacy, and Blood Transfusion Station of Szeged

[Abstract] In Hungary, citric acid-sodium citrate-glucose (ACD) is used mainly as a blood preservative. Such blood can be stored for 3 weeks. In the GDR, the ACD-adenine-guanosine (ACG-AG) combination was introduced in

1972 with blood storage extended to 5 weeks. At the Blood Transfusion Station of Szeged, a program was initiated to introduce ACG-AG. The composition used in East Germany is as follows:

Composition of ACD-AG Stabilizer

Table 1

| Composition                      | Molar Weight | Stabilizer<br>g/l | Blood<br>mM | Blood<br>mM |
|----------------------------------|--------------|-------------------|-------------|-------------|
| Glucosum Ph. Hg. VI.             | 198          | 25.0              | 126         | 25.2        |
| Natr. citric. cryst. Ph. Hg. VI. | 294          | 13.2              | 45          | 9.0         |
| Acid. citric, Ph. Hg. VI.        | 210          | 4.8               | 23          | 4.6         |
| Adenin. sulf. pro inj.           | 202          | 0.5               | 2.5         | 0.5         |
| Guanosinum pro inj.              | 283          | 0.7               | 2.5         | 0.5         |

Preparation. Active charcoal is used to free the components of pyrogens. The citrate components and glucose must be treated separately to avoid yellowing and lowering of the pH. The adenine and guanosine are dissolved by gentle heating and the solution can be mixed with the other components without separation. The bottles used for blood storage are pretreated with 10% HCl to avoid fluid separation. To each 80 ml blood, 22 ml ACD-AG is added in the bottles. The stabilizer can be sterilized at 120°C for 20 minutes. It has a pH between 5.2-5.5. Thin layer and ascending paper chromatographic methods have been developed for testing the stability of the adenine and guanosine. They showed no spectroscopic changes even after a forced heat treatment at 120°C for 1 hour. The changes in the 2,3-DPG content of erythrocytes during storage were examined using different stabilizers. The results indicate that, after 5 weeks, the cellular 2,3-DPG content is 1-4-fold higher in the ACD-AG blood than in blood treated with other stabilizer compounds such as: EDTA, CPD, ACD, ACD-AG. The effect of various stabilizers on the serum hemoglobin content of the stored blood has also been studied. The results indicate that ACD-AG provides better storage conditions than do all the other blood stabilizers. Blood processed with ACD-AG at the Blood Transfusion Station of the Medical University of Szeged was used at the I. Surgical Clinic in 200 transfusions without any side effects. The results of further studies will be published later. References 10: 2 Hungarian, 1 East German, 7 Western.

Veterinary Medicine

HUNGARY

ORGANIZATION OF ANIMAL HEALTH ACTIVITIES UNDER CONDITIONS OF LARGE INDUSTRIAL STOCKBREEDING. II. DUTIES OF THE STATE ANIMAL HEALTH SERVICE

Budapest MAGYAR ALLATORVOSOK LAPJA in Hungarian Vol 33 No 3 Mar 78 pp 158-160 manuscript received 14 Nov 77

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[Abstract] The State Animal Health Service (SAHS) which consists of various organizations and institutions, is under the direct supervision and control of the MEM (Ministry of Agriculture and Food Industry). The Veterinary Medical Research Institute of the Hungarian Academy of Sciences is the only exception. All organizations and institutions involved in veterinary practice are supervised by the MEM, Main Department of Animal Health and Food Hygiene thus insuring a uniform guidance to their professional work which serves directly the interests of the state and of the national economy. Veterinarians employed either by state farms or by farm cooperatives are not under the same, direct supervision and, therefore, do not have the same rights accorded to the veterinarians belonging to the SAHS. The organizations which are part of the SAHS are the megye (capital city) animal health stations, the Food Industrial Hygiene Control Service of the MEM, the National Animal Health Institute and its branch institutes, the Veterinary Vaccine Control Institute as well as the agricultural center organizations of the animal health stations, and these are directed by the Main Department of Animal Health and Food Hygiene of the MEM. All practicing veterinarians, including those employed by state and by industrial farms belong to the "animal health service". The SAHS is responsible for serving primarily the interests of the national economy and for fulfilling national demands in the field of agricultural and food industrial production as well as in certain areas of veterinary practice. To do this, it enjoys special, broad-range rights given to it by the state and functions as a public authority. This authority extends over individuals and companies involved in production, processing and marketing as well as over other animal health organizations and the veterinarians employed by them. In addition to its special rights, the SAHS insures its authority by selecting a leadership consisting of several hundred top specialists in veterinary medicine and state administration. The general administrative duties of the SAHS include the organization of decision making, of implementation and of control. Decision making responds to the growing economic demands as formulated by the Ministerial Council. Implementation is regulated in a uniform manner by the MEM Main Department of Animal Health and Food Hygiene. Control is a continuous process which starts with evaluation of the task as defined and pinpoints any deficiencies. One of the main tasks of the SAHS is the cultivation of international cooperation among countries with which close trade or tourist relations exist or which have a potential effect on the domestic epizootic

situation because of their geographic location. Mutual, open exchange of information, especially about seasonal epizootic conditions, is of utmost importance. One especially important duty of the SAHS is the organization of prevention and control of epizootic outbreaks in large industrial animal farms. This includes the production, stockpiling and distribution of vaccines. Decisions of great impact are involved, responding to constantly changing situations. Today, the greatest danger is presented by those contagious diseases against which no preventive vaccines exist or those which have never occurred on our continent or had not occurred for a very long time. The eradication of certain diseases is one of the most important tasks of the SAHS. The 15 year struggle to eradicate bovine tb is slated to end successfully by 1980. Considerable progress has been made in the eradication of bovine brucellosis but the most difficult tasks are still ahead. A program has been worked out against Aujeszky's disease in swine. The elimination of infectious mastitis in cows has begun. Preventive measures have been taken against the spread of cattle leukosis. Considerable organizational tasks are presented in the area of animal (environmental) and food hygiene. These include the disposal of liquid manure, industrial and city waste waters, waste water sludge diseased animal carcasses. Biochemical studies of metabolic diseases and infertility as well as the prophylactic testing of fodders for pesticide and mycotoxin content represent new areas of responsibility. The organization of a uniform approach in the practical implementation of food control is the next plan. No references.

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PROBLEMS CONCERNING THE GENETICS OF LEUCOSIS IN BOVINE CATTLE. REPORT 2:  
INFLUENCE OF FEMALE AND MALE PARENT ANIMALS ON THE FREQUENCY OF OCCURRENCE  
OF LEUCOSIS IN THE PROGENY

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[Abstract] A study was made on bovine cattle to verify the hypothesis of leucosis being a monogenically recessive hereditary disease. The genealogy of Latvian cattle has been traced to a Danish cow, while Lithuanian cattle descends from two lines of bulls imported from Denmark. Three types of crossbreeds ( $QQ \times \ddot{\delta}\delta$ , A-healthy,  $\alpha$ -sick) were considered in the experiment:  $q\alpha \times q\alpha$ ,  $AA+A\alpha \times q\alpha$ , and  $AA+A\alpha \times AA+A\alpha$ . A statistical analysis based on family identification as well as on three-generation triads of females and of males respectively establishes that the occurrence of leucosis in cows is definitely more frequent when they descend from either leucotic bulls or leucotic cows, the morbidity level being much lower in families with a sporadic history of leucosis. Some resistance is seen to be developing in consistently leucotic families, the proneness-immunity heritability factor varying from 0.07 to 0.5, depending on the fraction of sick specimens in the population. Figures 1; references 22: 18 Russian, 1 German, 3 Western.

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